ENVIRONMENTAL ATTITUDES AND BEHAVIORS:
AN EXAMINATION OF THE ANTECEDENTS OF
BEHAVIOR AMONG AIR FORCE MEMBERS AT WOR

THESIS

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AFIT/GEE/ENV/96D-11

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Presented to the Faculty of the School of Engineering

of the Air Force Institute of Technology

Air Education and Training Command

In Partial Fulfillment of the Requirement for the

Degree of Master of Science in Environmental and Engineering Management

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Mark S. Laudenslager

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ABSTRACT

A questionnaire was randomly distributed to members of the United States Air Force at Wright-Patterson AFB, OH, with 307 returned. The survey was designed to test the Theory of Planned Behavior (TPB) model developed by Icek Ajzen, and the Organizational Theory of Planned Behavior (OTPB) model explored in this research effort. Validation and measurement of the TPB in relation to an organizational setting was accomplished, with the Organizational Theory of Planned Behavior (OTPB) developed. The behaviors and intentions individuals have towards recycling, energy conservation, and carpooling were examined, with the demographic variables of gender, age, and education also investigated. Regression analysis revealed that the TPB is supported by this research, while the OTPB is not well supported. However, the organizational commitment component of the OTPB does account for significant variance, and seems to support a portion of the OTPB. The demographic variables of gender, age, and education provide useful insight into the organization. Women show a greater tendency to carpool to work than men, and are more likely to participate in the behavior. Also, having some college education influences energy conservation behavior, energy conservation intention, and carpooling behavior at work. It was also shown that those who are older have a greater tendency to conserve energy at work, and are more likely to participate in the behavior.

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I. INTRODUCTION

Background Information

There has been much written about the rapid deterioration of the world's ecosystems, with a clear need to "achieve a balance between preserving the environmental integrity of fragile ecological systems and maintaining sustainable economic growth" (Stone, Barnes, and Montgomery, 1995: 595). Because the Department of Defense has a significant impact on the environment, it has become one of the nation's leaders in preserving environmental quality. With the growing concern for the environment developing in the early 1970s, there has been a great deal of legislation written. Among the most prominent legislation is the National Environmental Policy Act, which set the direction for all environmental efforts in the United States. All federal agencies are required to consider the environment in their decision-making process, and involve the public so that a balance can be struck between the needs of man and the needs of the environment.

There is growing evidence that individuals are becoming more personally responsible in terms of their habits and life styles, with environmental responsibility reaching unprecedented levels today (Stone, Barnes, and Montgomery, 1995). The presence of an acceptable attitude towards the environment is necessary in order to

achieve environmentally responsible behavior. Dunlap and Van Liere (1978) have proposed a new environmental paradigm, consisting of an attitude and certain behavior that would be engaged in by the environmentally concerned individual. This new paradigm replaced an older one that was based on humans dominating the environment, the Dominant Social Paradigm (DSP). The New Environmental Paradigm (NEP) suggested that man should live in harmony with nature and limits should be placed on economic growth. Because individuals are having more of an effect on the environment today than ever before, it is necessary to closely examine those aspects that are the most influential.

The general attitudes, gender, age, and education of individuals play a major role in influencing environmentally responsible attitudes and behaviors (Rockland and Fletcher, 1994; Schwartz and Miller, 1991; Abbott and Harris, 1985; Gutteling and Wiegman, 1993; Honnold, 1984). The general attitude of the public is concerned with protecting the environment and promoting economic growth. "Polls show respondents overwhelmingly support the environment and the regulations designed to protect it" (Line, 1995: 17). However, many are not willing to act on those beliefs. "Most say that individuals can do little, if anything, to help improve the environment" (Schwartz and Miller, 1991: 26). It is clear, however, that the environment is important to most, and that behavior is only slowly aligning with general attitudes.

Variation in attitudes concerning the environment vary by gender, education, and age. "Van Liere and Dunlap report that the empirical evidence on the relationship

between a person's sex and concern for the environment is mixed...however, women more so than men tend to support policies that regulate and protect the environment" (Steger and Witt, 1989: 627). There is a positive association of environmental knowledge and attitude with education, with environmental concern being inversely related to age (Arcury, 1990). The more a person knows about the environment and the issues that it presents, the more his or her attitude will be influenced towards protecting it. Also, the younger a person is, the more he or she is accepting of new ideas and views, not holding to the traditional dominant social order. Thus, those under forty have been shown to be more environmentally responsible than those over forty (Abbott and Harris, 1985).

The attitudes and behaviors of individuals in the workplace have moved toward increasing environmental responsibility since the first Earth Day in 1970. Regulatory pressures have been the primary influence on businesses, with the public playing an increasing role as well. Because individual and societal values with respect to environmental responsibility have increased since the 1970s, organizations that do not adopt environmental values will find their culture incongruent with their employees. This will influence morale, loyalty, and productivity (Hoffman, 1993). It is important to note that organizations are increasingly integrating environmental thinking at all levels in the decision-making process, with environmental commitment constituting a crucial element in an organization's performance and survival.

Achieving and demonstrating sound environmental performance is an increasing concern among organizations, especially in the context of increasingly stringent

legislation. The successful management of an organization requires management adaptation to significant forces that compel the organization to change. Implementation of an Environmental Management System (EMS) is a rapidly growing force that is affecting many businesses worldwide, and the International Organization for Standardization (ISO) has established the ISO 14000 standard to address this concern. The ISO 14000 standard is a series of standards which will help organizations develop and implement environmental management systems so that they may manage their impacts upon the environment. According to the ISO standard, an EMS is a part of an organization's overall management structure which addresses the immediate and long-term impact that its operations, services, and products have on the environment. Also, the EMS provides order and consistency in organizational practices to anticipate and meet growing performance expectations through continuous improvement. Having in place an ISO standard, specifically ISO 14001, will facilitate environmentally acceptable behaviors among individuals in the workplace, and further promote awareness programs.

The Air Force has taken steps to facilitate environmental awareness at the workplace, and has addressed four key areas of the environment: restoration, compliance, conservation, and pollution prevention. Budgets for restoration, compliance, conservation, and pollution prevention have all increased since the Air Force got involved in the environmental business, with the resource commitment ensuring that the Air Force complies with all federal, state, and local regulations (Allen, 1994). The Air Force has stressed programs aimed at the work place, with a focus on influencing attitudes and

behaviors (Air Combat Command, 1995). It is the individual who will have the greatest impact on mission-related activities, thus it is necessary to have strong environmental leadership at every level within an organization. Understanding the behavior of Air Force members in the areas of the environment is complicated, with behaviors not always corresponding to attitudes (Holt, 1995). Thus, the Air Force needs to focus on influencing the behavior of its workers rather than influencing their attitudes in order to achieve its mission and provide for a sustainable future.

There has been a great deal of research in the past 20 years on "environmentally responsible" and "socially conscious" behaviors, but little work relating attitudes and behaviors in an organizational context. Work has focused on identifying the demographic and personality characteristics of those most likely to engage in these behaviors. The most enduring avenue of research in this area, however, has been to examine how cognitive and psychosocial variables influence environmental behavior (Gooch, 1995; Hamid and Cheng, 1995; Lee, De Young and Marans, 1995; Scott and Willits, 1994; Ungar, 1994). Because of the growing support for the notion that conservation behavior is likely to be overdetermined (having multiple antecedents) and that specific conservation behaviors have distinctly different antecedents, the theory of reasoned action and the theory of planned behavior models have been developed to predict environmental attitudes and behavior (Azjen and Fishbein, 1980; Azjen, 1985, 1991). The theory of planned behavior is a general model in which the theory of reasoned action represents a special case. The theory of reasoned action determines

behavior by prior intentions, which themselves are affected by an individual's attitude toward the behavior and his or her subjective norm. The theory is designed to deal with behaviors over which people have a high degree of volitional control. The theory of planned behavior, however, explicitly recognizes the possibility that many behaviors may not be under complete control, and the concept of perceived behavioral control is added in the model prior to intentions (Ajzen, 1991). However, when behavioral control approaches its maximum and issues of control are not among an individual's important considerations, then the theory of planned behavior reduces to the theory of reasoned action. In those instances, neither intentions nor actions will be affected by beliefs about behavioral control, and the only remaining dispositions of interest are attitude toward the behavior and subjective norm (Ajzen, 1988). In this research study, the Theory of Planned Behavior (TPB) is used to better understand why Air Force members behave the way they do in relation to specific environmental behaviors (recycling, energy conservation, and carpools), and to see if prediction of these environmental behaviors is possible within an organizational context.

Research Objectives

The purpose of this research study was to develop a survey instrument based on the Theory of Planned Behavior (TPB) model developed by Icek Ajzen. Validation and measurement of the TPB in relation to an organizational setting was accomplished, with the Organizational Theory of Planned Behavior (OTPB) developed. A survey was

developed from questions in the literature and from questions devised by this researcher to assess individual environmental behaviors at work, and to see how the antecedents of behavior predict the willingness of a person to act. In general, surveys addressing the environment are designed to measure environmental concern by determining opinions held by people, while environmental commitment itself is difficult to measure with behavioral scales. It is, however, generally believed that behavioral changes are required in order to solve environmental problems. Research generally shows that many individuals hold pro-environmental attitudes; however, only a few engage in ecologically responsible behavior (Dunlap and Van Liere, 1981; Gigliotti, 1992; Line, 1995; Holt, 1995).

This research study provides an opportunity for those in the position of setting policy to develop and target programs that will influence the behavior of Air Force members with respect to the environment. Also, an understanding of why Air Force members behave the way they do, specifically towards the environmental behaviors of recycling, energy conservation, and carpooling, is shown . Further, by examining the demographic variables, conclusions will be drawn on exactly which Air Force members show the most responsible behavior towards the environment. It should be noted that environmental problems cannot always be solved with the development of new technology or methods. "Understanding what Air Force members know, think, feel, and do regarding the environment, nature, and pollution is an important first step. This

information is critical in order to follow up with relevant and effective environmental programs" (Holt, 1995: 1-7).

II. LITERATURE REVIEW

The purpose of this chapter is to examine individual and organizational environmental attitudes and behaviors, with a focus on why people behave the way they do in relation to the environment. Public attitudes toward the environment have steadily increased since the late 1960s, with environmental concern maturing dramatically in the late 1960s, reaching a peak with the first Earth Day in 1970. Concern declined considerably in the early 1970s, but saw a gradually increase for the remainder of the decade. The 1980s saw a significant and steady increase in both public awareness of the seriousness of environmental problems and in support for environmental protection, even though President Reagan's administration curtailed many government environmental programs. Public concern for environmental quality reached unprecedented levels on Earth Day in 1990, and interest is still quite high (Fischer and Schot, 1993). The supportive nature of public opinion provides a valuable resource for the environmental movement, with the future of the movement depending heavily on the degree to which environmentalists can effectively mobilize that support. The environmental movement has been extremely successful in attracting and maintaining, for two decades, the public's attention to and endorsement of its cause. However, there are many varying attitudes and behaviors in the public, especially among United States Air Force personnel. Attitudes do not always correspond to behaviors; thus, it is imperative that the USAF look at programs that influence behavioral changes rather than just attitude changes (Holt, 1993).

Areas of investigation in this study include environmental attitudes, general attitude-behavioral theories, organizational perspectives, and the Department of Defense (DoD) focus in relation to the environment. This study provides insight into why people, especially Air Force members, behave the way they do.

Environmental Attitudes

Attitudes that people have towards the environment have steadily increased since the first Earth Day in 1970. By examining the general attitudes and measurements, the Dominant Social Paradigm (DSP) and New Environmental Paradigm (NEP), and demographic characteristics, a better understanding of the attitude-behavioral relationship will be shown.

General Attitudes and Measurements. The general attitude of the public concerning the environment is one centered around protecting the environment and fostering economic growth. The public remains committed to the "core value" of a clean environment, but their attitudes have evolved and become more complex over time. A large majority of the public believes that there is no inherent conflict between protecting the environment and fostering economic growth, and that technology holds the key to solving environmental problems. "Polls show respondents overwhelmingly support the environment and the regulations designed to protect it" (Line, 1995: 17). President Clinton wrote that "you don't have to sacrifice environmental protection to get economic growth. The choice between jobs and environment is a false one: We can have both"

(Rockland and Fletcher, 1994: 39). This view is how most people view the environment/economy relationship. A survey by Times Mirror Magazines has found that for three consecutive years most respondents believe that environmental protection and economic development go hand in hand. Almost everyone believes we can find a balance that allows us to enjoy economic progress while making sure our rivers, lakes, mountains, and wildlife are protected (Rockland and Fletcher, 1994: 39). And what if the public is faced with a choice between the environment and the economy? The "environment will win, hands down: 6 out of 10 Americans say that environmental protection is more important than economic development" (Rockland and Fletcher, 1994: 39). American attitudes concerning how the environment should be used can be classified in two main categories: Conservationists believe that through sound management we can both protect and enjoy the use of natural resources; preservationists believe that the only way to protect the environment is to put it off limits to the public. The poll conducted by Times Mirror Magazine shows that roughly 72 percent of respondents take a conservationist stance, with only 20 percent agreeing with the preservationist position (Rockland and Fletcher, 1994: 40). The survey also shows that most respondents believe water pollution is the greatest problem facing the environment, and that the federal government should be putting more money toward environmental programs. Most respondents support stricter environmental regulations and an increase in federal funding of environmental efforts. Most respondents do not believe, however, that environmental protection is an optional indulgence that can be cut back with the rise and fall of economic cycles (Rockland and

Fletcher, 1994: 40). One in five Americans vote with respect to the environment when they go to the polls, enough to carry most elections. Overall, the American public is seeking sound, pragmatic solutions to environmental problems that balance environmental and economic concerns. "In this new, positive way of living, environmental protection is no longer seen as a hindrance to economic development but rather as a forerunner of the next industrial revolution" (Rockland and Fletcher, 1994: 40).

The size of the gap between environmental attitudes and behavior varies widely. In the Roper Organization's report on the environment, a clustering technique is used to divide Americans into five behavioral segments, based primarily on whether or not they engage in a list of "environmentally friendly" practices (Schwartz and Miller, 1991: 29). The first of the environmental consumer groups are known as the "True-Blue Greens," accounting for 11 percent of the adult population. Members of this group are unique because their behavior reflects their very strong environmental concerns, and they are the leaders of the "green movement" among the general population. The "True-Blue Greens" also tend to earn more and have more education than most Americans. The "Greenback Greens" are the next group, accounting for 11 percent of the adult population. They are the group most willing to pay more money for environmentally safe products, but will not give up their free time or desire for convenience. The "Sprouts" are a key group that hold ambivalent views about environmental regulations, making up 26 percent of the adults. They are also less certain about which side to take when confronted with the trade-off

between protecting the environment and encouraging economic development, but they are also more inclined to adjust their lifestyles than any other group except the "True-Blues." The "Sprouts" are a key segment because their political and social views closely reflect those of most Americans, and they usually are the "swing" group in elections. The "Grousers" are the fourth environmental consumer group identified by Roper, holding 24 percent of the adult populations views. The "Grousers" are indifferent to the environment, rationalizing those indifferences. They see consumer indifference as the mainstream attitude, and exhibit a lower level of commitment than the national average. The "Basic Browns" are the fifth and largest of the environmental consumer groups, accounting for 28 percent of adults. They are characterized by a virtual absence of any pro-environmental activities, but unlike the "Grousers," they do not rationalize their behavior or point to the shortcomings of other people. The "Basic Browns" are the group least likely to support government environmental regulations, and are the most socially and economically disadvantaged group (Schwartz and Miller, 1991: 29 - 34). In the study by the Roper Organization, "the greenest consumers, the True-Blues and the Greenbacks, have a median household income of almost $32,000, or 40 percent higher than the average household income of an environmentally 'indifferent' person. Solid majorities of the most environmentally active Americans have been to college, while majorities of the least active groups have not" (Schwartz and Miller, 1991: 34). Deep public concern about environmental problems has been reached, but voters have been largely unwilling to take the next step and approve sweeping changes. "The attitudinal shifts of the 1980s

should gradually change environmental behavior in the 1990s...setting the stage for the 'greening of America' " (Schwartz and Miller, 1991: 35).

Human activities that interact with Earth's natural systems are driven by three fundamental factors that relate to the general attitudes expressed by the public: the number of human beings and their distribution around the globe; human needs and desires, which provide individuals and societies with motivations to act; and the cultural, social, economic, and political structures that shape and mediate their behavior (Gigliotti, 1992: 16). The second factor concerning human needs and desires is analyzed by Gigliotti, resulting in some interesting conclusions. It appears that environmental education has succeeded largely in increasing concern about the environment and about pollution problems caused by industry, while the message of the individual's role in environmental problems is just beginning to be sounded. It is not surprising then that the public is not necessarily ready to make personal sacrifices. A general trend toward making personal sacrifices is not likely to develop (Gigliotti, 1992: 23). Instead, when specific lifestyle changes or personal sacrifices are needed, the educational message must be specific - explaining the nature of the problem, the relationship of individual actions to the problem, and the specific individual response needed. Also of interest, people who believe that technology and growth will solve environmental problems are less likely to make personal sacrifices (Gigliotti, 1992: 23). A belief in growth and technology may be an impediment for some people to accept the new target of environmental effort, namely changing personal lifestyles. The implication for environmental education is that, before

people will be ready to make personal sacrifices for environmental reasons, the connections between today's lifestyles and environmental problems must be better understood.

Different societies have different attitudes concerning the environment, with the West stressing individualism and the East stressing collectivism. There appears, however, to exist a common faith among industrial countries in progress, in the necessity and advantages of growth, and in societal adaptation as a solution to problems in the biophysical world (Gooch, 1995: 514). Dunlap and Van Liere found that demographic variables only have a limited use in explaining environmental concern, and that even the most successful predictors are only modestly correlated (Dunlap & Van Liere, 1980: 192). Inhabitants of the Baltic States studied in Gooch's survey expressed great concern for local environmental problems while at the same time reporting relatively low support for global problems.

Majorities typically see environmental problems as serious, and the upward trend in such attitudes over the past decade is unmistakable. Most see environmental quality as deteriorating and likely to continue to deteriorate. Not only are environmental problems seen as more serious today, but they are increasingly viewed as representing a threat to human well-being (Dunlap and Scarce, 1991: 651). Support for government action on behalf of environmental quality has risen substantially, particularly in the last few years. A large majority believes that government is "spending too little" on the environment, and majorities say that government regulations have "not gone far enough" and that there

is "too little" government regulation in the area of environmental protection (Dunlap and Scarce, 1991: 652 - 660). Public support for government action on specific types of environmental problems is also strong, especially since the public sees government as having primary responsibility for environmental protection. There is an increasing preference for environmental quality over economic growth. This trend has grown so markedly over the past decade that environmental protection is now endorsed by large majorities and economic growth by only small minorities (Dunlap and Scarce, 1991: 661 - 665). A similar trend is apparent in support of environmental protection "regardless of the cost." An increase in the public's expressed willingness to pay higher prices for goods and services, to the point of absorbing the costs of environmental protection, has clearly become the majority position. In summary of Dunlap and Scarce's research, the trends indicate that public concern for environmental quality has reached all-time highs. While questions about the strength of environmental concern remain unclear, growing majorities see environmental problems as serious, worsening, and an increasing threat to human well-being; strong and growing majorities support government action to protect environmental quality; and majorities generally side with environmental protection over economic growth as well as indicate a personal willingness to pay the costs of such protection.

According to research conducted by Robert Rohrschneider, attitudes of Europeans toward environmental protection is consistently favorable (Rohrschneider, 1988: 347 - 367). His findings indicate that citizens hold favorable attitudes toward environmental

protection because their value priorities have changed, and because they are worried about the true state of ecological problems. Self-interests of the Europeans have become less important as sources of opinions than they have been in the past. In similar research, Liisa Uusitalo found high environmental concern and environmentally favorable attitudes do not automatically lead to environmentally beneficial behavior (Uusitalo, 1990: 211 - 226). Despite desiring the collective good, environmental quality, each individual often tries to shun personal sacrifices and wishes that others will bring about the collective good. Also, a person's activity in favor of environmental protection is usually increased if he or she can also attain some private side-benefits from the activity in addition to contributing to the collective goal. This is illustrated by the observation that those who suffer from environmental hazards are more willing to do something and to support collective measures.

The most comprehensive study conducted on environmental attitudes and behaviors was undertaken by the Gallup International Institute. They conducted a survey representing the findings from 24 major nations around the world, accounting for approximately 40 percent of the world's population (Dunlap et al, 1993). Their findings are based on representative national samples of 1000 or more citizens interviewed in person, in the home, by affiliates of Gallup International. Results of the survey indicate a deep concern over environmental problems, a willingness among both poor and rich nations to give priority to environmental protection over economic growth, a majority endorsement of the win-win paradigm, a deep concern about the loss of plant and animal

species, an acceptance of responsibility for environmental problems in general, developing countries willingness to help other developing countries, a belief that individual citizen efforts can contribute significantly to a healthier planet, and the citizens of the world are more deeply concerned and ready to take action on the environment than are their leaders (Dunlap et al, 1993). Overall, the Health of the Planet Survey demonstrates that environmental awareness and concern have spread throughout the world, reaching people in the poorer, developing nations as well as in the wealthier, industrialized nations. Clearly, citizens in all nations appear receptive to the goal of strengthening environmental efforts around the world.

General attitudes of the public concerning the environment were addressed internationally by Louis Harris and Humphrey Taylor (1990) in their article "Attitudes to Environment." Among other things, the survey measured: awareness and perceptions of environmental issues; levels of concern about environmental issues; perceptions of causes of pollution and environmental degradation; attitudes to global and regional interdependence; and attitudes to possible policies for addressing environmental problems (Harris and Taylor, 1990: 33). There was deep and widespread concern about the quality of the environment among all nations, with most countries rating the environment in their countries as only fair or poor. Most believed that the environment would become worse over the next half century, with water pollution bringing the most concern. Almost all of the countries believed that their governments were spending too little to protect the environment or prevent pollution, and that protecting the environment should be done in

cooperation with other countries. Stronger action by international organizations, such as the United Nations, was called for, since most felt that individual governments were not doing enough. A willingness to pay higher taxes was expressed, but only if the extra revenue were spent to protect the environment. Other important findings include: man, not nature, was almost universally seen as the cause of environmental problems; industrial activity and government failure or inertia were seen as the most important causes of environmental degradation; most people, although pessimistic, were not fatalistic; the attitudes of the leaders were, on the whole, fairly close to those of the public; and women were generally somewhat more aware of, or more concerned about, environmental degradation than men (Harris and Taylor, 1990: 36). The environment is a global political issue which governments cannot afford to neglect. "In most countries, political survival now demands sensitivity to public opinion on environmental matters" (Harris and Taylor, 1990: 37). The general attitudes of the public everywhere are aroused and are demanding more from their governments.

Dominant Social Paradigm (DSP) and New Environmental Paradigm (NEP). An examination of the Dominant Social Paradigm (DSP) and New Environmental Paradigm (NEP) provide the necessary theories involved in understanding the shift in environmental attitudes in the late 1960s, and the reason why environmental concern still remains a high priority today. The DSP constitutes a worldview in which humans dominate the environment. Nature is viewed as a resource that can be controlled, a belief predominantly held by the Judeo-Christians that humans were given dominion over the

earth. In addition, the DSP assumes that a free market is the best form of political economy for allocating scarce resources. Devotion to the market economy is paired with the belief in the need for ever-expanding growth, with growth sustained by an availability of resources. Faith in science and technology is an underlying belief in the paradigm that all shortages of natural resources can be overcome. Scientific management will guide the DSP, relying on division of labor and quantification to further its goals. "The ordering of society in the context of a worldview managed by science is believed to be best accomplished in a centralized manner, whereby power and authority are greatly concentrated at the top" (Abbott and Harris, 1985 - 1986: 220).

A major theme in the literature on environmental problems in the United States is that such problems stem from our society's traditional values, beliefs, and ideologies. Research by Riley Dunlap and Kent Van Liere (1984) examined the empirical linkage between commitment to the DSP and concern for protecting environmental quality. The key dimensions of the DSP were confirmed using factor analysis, with the results of the bivariate and multivariate analyses indicating not only that commitment to the DSP is negatively related to environmental concern, but that commitment to the DSP appears to be a major factor influencing environmental concern (Dunlap and Van Liere, 1984: 1015). DSP as a whole is negatively related to concern for environmental protection, with some of its dimensions appearing to be more important than others in influencing environmental concern. Overall, the results of the study by Dunlap and Van Liere "strongly support the hypothesis that commitment to the dominant social paradigm leads

to lower levels of concern for environmental protection, as the DSP was found to explain considerable variation in several indicators of environmental concern" (Dunlap and Van Liere, 1984: 1023). The results substantiate the claim that traditional American values and beliefs pose barriers to the development of a strong pro-environmental orientation, an important claim that has heretofore lacked a solid empirical foundation. While the DSP promotes the use of nature for the good of man, the NEP favors a harmonious relationship with nature.

According to the Kuhnian theory of paradigmatic change, the dominant paradigm will remain until enough evidence is discovered that does not fit into its context. The transition to a more ecologically sound worldview which contradicts the values outlined in the DSP has occurred (Geller and Lasley, 1985: 9). The New Environmental Paradigm (NEP) recognizes the position of humans within nature, the concept of scarce resources, and the rejection of the commitment to economic growth. More emphasis is placed on nonmaterial measures of well-being, such as community, participation in that which effects our lives, and human skills (Abbott and Harris, 1985 - 1986: 221). Unlike those values espoused by people with the dominant view, these beliefs are seen to be best pursued in decentralized social and political communities.

In an attempt to empirically examine the paradigmatic shifts, Dunlap and Van Liere (1978) developed the New Environmental Paradigm scale. The purpose of the effort by Dunlap and Van Liere was to "report a preliminary effort to determine the extent to which the public accepts the content of the NEP and, in doing so, to develop an

instrument to measure the New Environmental Paradigm" (Dunlap and Van Liere, 1978: 11). It was determined that the general public tends to accept the content of the emerging environmental paradigm much more than what had been expected. Dunlap and Van Liere state that "research on the relationship of the NEP to other attitudes and actual behavior is quite important, especially since we fear some may draw overly optimistic conclusions about the future of public commitment to environmental quality given the surprising degree of public endorsement of the NEP" found in their study (Dunlap and Van Liere, 1978: 16). It is interesting to note that the two authors believe it would be naive to expect individuals who endorse the NEP to consistently engage in behaviors congruent with this new world view. This is very insightful, especially since it has been shown that attitudes and behavior do not consistently mesh (Holt, 1995). The multi-dimensions of the scale developed by Dunlap and Van Liere (1978) were confirmed by Noe and Snow (1990), as well as by Geller and Lasley (1985), but differences may occur when comparing various populations. Unlike other scales in the social sciences, the NEP scale has had limited exposure and testing. Only through repeated testing across various populations will confusion and contradictory findings about the scale be cleared, and the greater goal of assessing paradigmatic shifts begin. The NEP scale still represents an advanced tool for measuring environmental concern when compared with the techniques available only a decade ago.

Demographic Characteristics. The attitudes of the public concerning the environment vary by gender, education, and age. "Research has demonstrated that

perceptions of risk are influenced by the qualities of a hazard - whether exposure to it is voluntary or controllable, whether its adverse consequences can be catastrophic, whether its benefits are distributed fairly among those who bear the risks, and so on" (Flynn et al, 1994: 1101). Men tend to judge risks as smaller and less problematic than do women. Perceptions of risk are higher for women for most hazards as well. A study by Abbott and Harris found that the differences between men and women were not "statistically significant" (Abbott and Harris, 1985 - 1986: 226). The lack of difference in attitudes between the genders was related to the changing role of women in Western society. As women have become more accepted in previously male-dominated occupations, their frame of reference has become more similar to that of men. It is stated that "positions as contributors and consumers in modern society, or as part of our Western culture, could be a more important influence on environmental attitudes than other differences in socialization and experience between men and women" (Abbott and Harris, 1985 - 1986: 226). Because Abbott and Harris's views were expressed almost ten years ago, the notion that women are more concerned about the environment than men today is a more widely accepted view.

In general, not much research has been conducted to investigate the relation between demographic characteristics and reactions to environmental hazards. However, it has been consistently found that women react differently to environmental hazards than men (Gutteling and Wiegman, 1993: 433). Women assess environmental hazards as more unacceptable and threatening, and report more feelings of insecurity than men.

Gender attitudes are related to formal education. Formal education can be of importance for the reaction to environmental hazards because these hazards are very complex and difficult to understand, and reacting to them may very well be based on the subjects' level of formal education. At present, little is known about the relation between formal education and reactions to environmental hazards (Gutteling and Wiegman, 1993: 435 - 440). Insight into the relation between gender and formal education and reactions to environmental hazards is rather fragmentary, which to a great extent is caused by the fact that most studies have concentrated on one particular type of hazard. People who have less to gain from technological developments (i.e., the lower educated persons) have a less positive attitude (Gutteling and Wiegman, 1993: 446 - 447).

Van Liere and Dunlap report that the empirical evidence on the relationship between a person's sex and concern for the environment is mixed - some studies report modest correlations between being female and environmentalism while others conclude that differences based on sex are not relevant. In contrast, Milbrath concludes that studies using gender as a variable show that women are more environmentally oriented than men. Similarly, national opinion surveys show that women more than men tend to support policies that regulate and protect the environment (Steger et al, 1989: 627 - 635). Women, to a much greater degree than men, fear the continued use of nuclear power. This includes an unwillingness to build more nuclear power plants and a willingness to close down existing plants. The low support expressed is due to concerns for safety, and an even greater uncertainty for the further development of the technology (Brody, 1984:

209 - 228). Women also, more than men, are likely to perceive higher risks to health and the environment from pollutants. There are a number of ways to explain women's high perceptions of risk and their protective stance toward the environment (Steger et al, 1989: 630 - 643). One is that women have been socialized to be more compassionate, nurturing, and protective than men. Generally, the evidence on gender and environmentalism, although not conclusive, leads to the expectation that women are more likely than men to support the "spaceship earth" ideas of the New Environmental Paradigm. It seems likely that women will be inclined to express attitudes consistent with a general disposition to be protective and nurturing toward both humans and other living things. The sex of the individual has an effect on the pro-environmental measures of protective orientations, perceptions of risk, support for the NEP, and support for a moratorium on acid rain causes. Women's socialization patterns produce attitudes and beliefs that are easily aligned with those expressed by environmentalists. In contrast, men's environmentalism may be more directly linked to policy-relevant knowledge, but this knowledge may not provide as strong a motivation to support environmental causes as does women's socialization.

Two lines of argument are commonly presented to explain sex-role differences in attitudes toward the environment (Arcury et al, 1987: 463 - 466). The first is based on the proposition that Western society views the environment as a resource to be conquered and developed by science and technology for the primary use of human industry. The second states that the male market mentality is geared toward economic growth no matter

what the environmental costs. Thus, women, being traditionally excluded from the marketplace, accept the goals of economic growth but less confidently view the harmful toll on the environment in the process. The traditional view held is that women are more concerned about the environment due to their socialization to the roles of mother and nurturer, and men are less concerned due to the emphasis on the scientific and technological in their socialization (Arcury et al, 1987). However, women tend not to be more concerned about acid rain, and men tend to be more knowledgeable about acid rain (Arcury et al, 1987). The results of the study provide for "no support for the theories of sex differences in attitude toward environmental issues based on sex role socialization that predict women are more concerned about the environment than are men" (Arcury et al, 1987: 468). It must be noted that the strength of sex role socialization theories cannot be completely evaluated by a single test.

"Women have stronger beliefs than men about consequences for self, others, and the biosphere, but there is no gender difference in the strength of value orientations" (Stern et al, 1993: 322 - 325). Empirical research on gender and environmental concern does not report consistent findings. In some studies, women appear more concerned about the environment, whereas in others the gender relationship disappears or is reversed. Mohai's (1992) recent review suggests that women express more concern than men in local environmental issues and that the difference is smaller for national issues. He also notes that women are less likely than men to take political action to protect the environment. Women tend to see environmental quality as more likely than men, taking

into account consequences for personal well-being, social welfare, and the health of the biosphere. When these gender-differentiated belief systems are taken into account, there is no remaining direct effect of gender on either political action or willingness to pay. Gender differences in environmentalism are the result of gender differences in beliefs about the effects of environmental problems (Stern et al, 1993: 340 - 345). Women are apparently more accepting of messages that link environmental conditions to potential harm to themselves, others, and other species or the biosphere than are men. Women tend to see a world of inherent interconnections, whereas men tend to see a world of clearly separate subjects and objects, with events abstracted from their contexts.

According to Paul Mohai (1992), the magnitude of the differences in concern for the environment is not great between the sexes. Even though women indicate somewhat greater concern, rates of environmental activism for women are substantially lower than for men. No firm conclusions can be drawn about the effects of gender on concern about general environmental issues. What information exists tends to show that even though women may be somewhat more concerned about the environment than men, they are less politically active on these issues. Why women's concerns about the environment should not translate proportionately into activism is unknown (Mohai, 1992: 1 - 10). Whether women, in reality, are more concerned about the environment than men has not been determined conclusively by empirical studies. The clearest and strongest evidence for gender differences has come from studies examining concerns about local environmental issues such as nuclear power and acid rain, with women tending to express greater

concern than men. Results of Mohai's study indicate that women are somewhat more concerned about the environment than men. However, the differences are modest. Although family nurturer and economic provider explanations have been offered to account for gender differences in concern, little evidence to support these explanations exists. Also, even though women may be somewhat more concerned about the environment than men, they are substantially less likely to be environmentally active. No explanation of this gap currently exists.

A great deal of theoretical uncertainty exists regarding gender differences in environmental concern. Several researchers have found women to be more concerned than men (Brody, 1984; Mohai, 1992; Van Liere & Dunlay, 1980), while some have found men to be more concerned than women (Arcury, Scollay, & Johnson, 1987). In a study conducted by MacDonald and Hara (1994), the two found that males were slightly more likely than females to express environmental concern, leading to further uncertainty already in the literature.

People generally seem to have a positive feeling toward the environment, but often do not know much about specific topics or issues, nor do they often practice positive behaviors concerning environmental preservation, protection, and conservation. Research conducted by Thomas Arcury indicates that there is a positive association of environmental knowledge and attitude with education and urban residence (Arcury, 1990: 300). Environmental concern is found to be inversely associated with age. Environmental knowledge, on the other hand, is associated with gender, with males being

more knowledgeable; the association of concern to gender and income has been inconsistent (Arcury, 1990: 300 - 304). Attention to environmental content, levels of environmental awareness, environmental knowledge, environmental concern, and subsequent behaviors have been shown to be positively intercorrelated (Ostman and Parker, 1987: 4). Education appears to have good utility as a predictor of environmental knowledge and subsequent behavior, while education and age are not related (Ostman and Parker, 1987: 8). According to Abbott and Harris (1985 - 1986: 225), "education does not correlate with scoring on the NEP scale." It is the focus and basis of the education rather than the level of education one attains that plays a role in the adoption of values. The lack of a relationship between environmental values and education could be attributed to the different types of education followed at the advanced level (Abbott and Harris, 1985 - 1986: 225). It was also found that data did not substantiate the concept that those with more money are more likely to be concerned with higher order needs, which might promote development of NEP values. Instead, environmentalism may be viewed as an important consideration at all levels of need. "At the lower levels, environmental quality is important for food, air, and water. At higher levels, the environment can be seen as an aesthetic good" (Abbott and Harris, 1985 - 1986: 225). Thus, environmentalism is not just an elite concern, but a concern expressed by all levels of society.

"Acceptance of the NEP among generational age groups was significantly higher for those under the age of forty than for those over that age" (Abbott and Harris, 1985 -

1986: 226). Those over forty hold similar NEP values to their younger counterparts, except where social structure is concerned. The general environmental values are embraced by young and old alike, but the degree to which they accept values that have traditionally ordered community relationships varies (Abbott and Harris, 1985 - 1986: 227). Those under forty do not reject the values of their elders; rather, they exhibit less conviction than their elders to values that order their lives. This degree of acceptance might cause some to attribute differences to the aging process. "In this view, the young in a society are not yet fully integrated into the dominant social order, and thus do not accept as strongly the values of their elders. However, they develop more traditional values as they age" (Abbott and Harris, 1985 - 1986: 227). It appears that the younger people are more accepting of the concepts embraced by "radical" environmentalists, while older people prefer the ideas of "traditional" environmentalists.

"Over the period 1973 - 1980, environmental concern declined in all age groups" (Honnold, 1984: 4 - 9). It was shown by Julie Honnold (1984) that aging and cohort effects operate in the same direction, with younger age groups showing higher environmental concern. The decreased levels of environmental concern in almost all age groups during the 1970s were the result of period effects rather than socio-biological aging processes or shared historical experiences. It is interesting to note that as young adults assume positions of social responsibility, their environmental concern diminishes (Honnold, 1984: 8 - 9). For the 1990s, this concern appears to remain unchanged, following the pattern of greatest concern in the youngest citizens (Arcury, 1990).

General Attitude-Behavioral Theories

The study of attitudes and behaviors crosses many academic disciplines, and is of particular interest because of its relevance to and pervasiveness in our daily lives (Appendix H). In order to better understand attitudes and behaviors, it is important to know the operational definitions of the two. There is widespread agreement among social psychologists that the term attitude refers to a general and enduring positive or negative feeling about some person, object, or issue (Petty and Cacioppo, 1981). Attitudes serve as convenient summaries of beliefs, which is the information a person has about other people, objects, and issues. Behavior is defined as being all of those activities of an individual which can be noted by another person, with or without the aid of instruments (Edwards, 1968). Behaviors may also have positive, negative, or no evaluative implications for the target of the behavior. The kinds of behaviors a person is likely to engage in can be predicted semi-accurately by knowing his or her attitudes, thus it is important to understand the relationship between attitudes and behavior, and the various theories developed. According to Sheldon Ungar (1994), the environment is a domain in which attitudes do not predict behaviors very well. The results are not the result of poor methodology, rather the environment is a synthetic macrocategory that does not fulfill any of the three criteria that are necessary for strong associations between attitudes and behaviors (Ungar, 1994). Attitude-behavior models misconceive the social-structural basis of most environmental impacts and should be replaced with a more macro approach that focuses on collective actions.

Much of the empirical research done in environmental sociology focuses on the study of environmental attitudes (Ungar, 1994). This research can have a twofold significance: at the individual level, attitudes are conventionally regarded as a means of predicting or changing environmental behaviors; at the collective level, attitudes are aggregated into public opinion, which as part of the process of democratic discourse is supposed to influence public policy toward the environment (Ungar, 1994). With the amount of research devoted to environmental attitudes and attitude change, one might expect that these would be modestly if not strongly related to behavior. The evidence, however, indicates that this is not the case, with only a small part of the data collected on environmental attitudes including related measures of environmental behavior. While direct evidence on behavior change is limited, the available data does not appear to be consistent with expressed attitudes or behavioral intentions. In their review of United States polls, Dunlap and Scarce (1991) observed that while there has been some change in personal behavior, there are few "substantial" changes in lifestyle.

Turning to studies that directly measure Attitude-Behavioral correlations in the environmental realm, most report correlations that are weak or at best modest (Ungar, 1994). The A-B gap is best stated by the fact "most people say they are willing to do a great deal to help curb pollution problems and are fairly emotional about it, but in fact, they actually do very little and know even less" (Ungar, 1994: 288).

The three criteria that must be met in order to find high A-B correlations are: the use of sophisticated measurement models for attitudes, such as multi-item indexes; the

adequacy of the behavioral criterion, with the A-B measure stipulating a need for high specificity and conceptual congruency and the A-B consistency increased when both variables are measured at the same level of specificity; and include "other variables" that affect the A-B relationship, such as behavioral intentions and attitudes toward the act (Ungar, 1994).

Attitudes help predict behavior, and express important aspects of an individual's personality (Petty and Cacioppo, 1981). There are four functions that attitudes might serve for a person: ego-defensive function, which are attitudes held because they help people protect themselves from unfaltering truths; value-expressive function, which occurs when holding a certain attitude allows the person to express an important value; knowledge function, which allows people to better understand events and people around them; and utilitarian function, which are attitudes that help people to gain rewards and avoid punishments (Petty and Cacioppo, 1981). Different people may hold the same attitudes, but the attitudes may serve very different purposes.

Because attitudes serve a number of useful functions, it is important to develop techniques to measure those attitudes so that the determinants of attitude (and attitude change) can be determined. The procedures for measuring attitudes can be divided into two major categories: direct and indirect (Petty and Cacioppo, 1981). Direct procedures measure attitudes by having a person provide a self-report of his or her attitude. Indirect procedures, on the other hand, attempt to measure a person's attitude without him or her knowing it. The types of direct measures include the Thurstone Scale, Likert Scale,

Semantic Differential, and the One-Item Rating Scale (Petty and Cacioppo, 1981). All of these scales make the assumption that people are perfectly willing and able to tell you about their attitudes. The various types of indirect measures include Disguised Self-Reports, Behavioral Indicators of Attitudes, and Physiological Indicators of Attitudes (Petty and Cacioppo, 1981). It is important to note that when reliability and validity checks are made on the various direct and indirect procedures, the indirect procedures are often found to be inferior to the direct attitude scales (Petty and Cacioppo, 1981). Most researchers therefore prefer the direct techniques, especially since greater precision and sensitivity can be accomplished.

There is a need to achieve a balance between preserving the environmental integrity of fragile ecological systems and maintaining sustainable economic growth. Environmental responsibility is thus needed, and according to Stone, Barnes and Montgomery, environmental responsibility is a "state in which a person expresses an intention to take action directed toward remediation of environmental problems, acting not as an individual concerned with his or her own economic interests, but through a citizen consumer concept of societal-environmental well-being. Further, this action will be characterized by awareness of environmental problems, knowledge of remedial alternatives best suited for alleviation of the problem, skill in pursuing his or her chosen action, and possession of a genuine desire to act after having weighed his or her own locus of control and determining that these actions can be meaningful in alleviation of the problem" (Stone, Barnes, and Montgomery, 1995: 601).

Conservation behavior has grown in recent years, with the notion that behavior is likely to be overdetermined (having multiple antecedents) and that specific behaviors may have distinctly different antecedents (Cook and Berrenberg, 1981; Oskamp et al, 1991). It has been documented that an increasing amount of waste materials has been recycled since the mid-1970s, and that a conservation behavior that is highly repetitive will be adopted based on past experience with that behavior (Macey and Brown, 1983). The effect that prior behavioral experience has on subsequent behavior, even when the subsequent behavior is in a new setting, is strong (Lee, De Young, and Marans, 1995: 399). Past behavior was found by Hamid and Cheng to have a direct, independent, and significant effect on both behavioral intentions and on actual behavior, with the results of their study indicating that past behavior predicts best what people intend to do (Hamid and Cheng, 1995: 694). However, there are constraints, known as behavioral specificity, that the prior experience must be with the same behavior as that being predicted or changed. Programs attempting to increase participation are advised to assess employees' prior experiences, and one can determine the behaviors with which employees are most familiar through the use of surveys, interviews, and focus groups (Lee, De Young, and Marans, 1995: 399). The initial focus of a new office-based program should be directed at those behaviors with the greatest familiarity to the employees.

There has been extensive research on the use of monetary incentives as reinforcers of recycling behavior, but there is no clear consensus on the durability of the technique. Monetary reinforcers are generally reliable at initiating conservation behavior (Geller,

Winett, and Everett, 1982), although some studies report contrary results (McClelland and Canter, 1981). It has been found recently that organizations should be cautious against using economic motivations to encourage conservation behavior in the office setting (Lee, De Young, and Marans, 1995: 400). Economic motivation is not among the powerful predictors of office-based behavior, and it seems that it works against promoting conservation behavior in such a setting by reducing an individual's commitment to such behavior and diminishing the intrinsic satisfaction (Lee, De Young, and Marans, 1995: 400).

There has been a wide range of noneconomic motivational predictors of conservation behavior as well, stressing a preservation of natural resources and a sense of direct personal fulfillment and satisfaction (Vining and Ebreo, 1990; Vining, Linn, and Burdge, 1992). People derive noncontingent enjoyment in carrying out many ordinary repetitive behaviors, including some that involve resource conservation (De Young, 1985-1986, 1986; De Young and Kaplan, 1985-1986). Convenience is also an important factor influencing behavior. An organization must provide the essential infrastructure before such behavior can become commonplace, but beyond the bare essentials, an organization can encourage a high level of participation by the careful design and management of its physical setting (Marans, Lee, Guagnano, and De Young, 1992; Marans and Lee, 1993).

Organizational commitment, a social norm, and individual commitment, a personal norm, both act to increase office-based conservation behavior (Lee, De Young,

and Marans, 1995: 399). However, organizational commitment need not affect individual commitment to change behavior, it seems able to directly modify behavior (Lee, De Young, and Marans, 1995: 399). This is important because organizations have an enormous influence in setting the level of organizational commitment; less so in altering individual commitment. Organizations must focus their energies on creating a coherent and strong policy supporting conservation behavior if they want to increase such behavior.

The theories of social psychologists are important in this study because of their longstanding contribution to the analysis of the relationship between attitudes and behavior.

> LaPiere's now-famous 1934 study raised the possibility that there was virtually no agreement between attitudes and behavior. Schuman and Johnson (1976) point out that research since LaPiere has shown, instead, that varying levels of congruence between attitudes and behavior are found depending on the behavior studied and the features associated with it. (Wall, 1995: 469)

Various studies aimed at explaining the attitude-behavior relationship have found that the relationship could be improved if attitudes and behavior were measured at the same level of specificity, if strength of attitudes were considered, and if behavioral intentions, situational factors, and reference groups were included in models explaining behavior (Ajzen and Fishbein, 1980; Wall, 1995).

The trend in recent attitude-behavior research has been to conceive behavioral intentions (BI) as a mediator between attitudes (A) and behavior (B). Five hypotheses were proposed by Kim and Hunter (1993) on the attitude-behavior relationship: A-BI

correlation is higher than A-B correlation, BI-B correlation is higher than A-B correlation, A-BI correlation is higher than BI-B correlation, the variation in BI-B correlations is greater than that of A-BI, and attitudinal relevance affects the magnitude of the A-BI correlation. A series of meta-analyses, integrating the findings of 92 A-BI correlations (N=16,785) and 47 B-BI correlations (N=10,203) were performed by Kim and Hunter (1993), with the results consistent with all five proposed hypotheses.

Theory of Reasoned Action (TRA). The theory of reasoned action, introduced in 1967 by Martin Fishbein and refined by Ajzen and Fishbein in 1980, is based on the assumption that human beings are usually quite rational and make systematic use of the information available to them. Human social behavior is viewed as not being controlled by unconscious motives, overpowering desires, or thoughtlessness. Rather, people engage in a given behavior only after they have considered the implications of their actions (Ajzen and Fishbein, 1980).

Prediction and understanding behavior is the ultimate goal of the theory of reasoned action. The first step toward this goal is to identify and measure the behavior of interest. Once the behavior has been defined, it is then necessary to ask what determines the behavior. A person's intention to perform (or to not perform) a behavior is the immediate determinant of the action. According to the theory of reasoned action, a person's intention is a function of two basic determinants, one personal in nature and the other reflecting social influence (Ajzen and Fishbein, 1980). The personal factor is the individual's positive or negative evaluation of performing the behavior; this factor is

termed attitude toward the behavior. The second determinant of intention is the person's perception of the social pressures put on him or her to perform or not perform the behavior in question; this factor, since it deals with perceived prescriptions, is termed subjective norm. Generally speaking, individuals will intend to perform a behavior when they evaluate it positively and when they believe that others think they should perform it (Ajzen and Fishbein, 1980).

According to the theory, attitudes are a function of beliefs. The beliefs that underlie a person's attitude toward the behavior are termed behavioral beliefs. Subjective norms are also a function of beliefs, but beliefs of a different kind, namely the person's beliefs that specific individuals or groups think he or she should or should not perform the behavior. These beliefs underlying the person's subjective norm are termed normative beliefs (Ajzen and Fishbein, 1980).

A summary of the theory of reasoned action, as described above, can be seen in Figure 1.1. Through a series of intervening constructs it traces the causes of behavior back to the person's beliefs. Each successive step in this sequence from behavior to beliefs provides a more comprehensive account of the causes underlying the behavior (Ajzen and Fishbein, 1980).

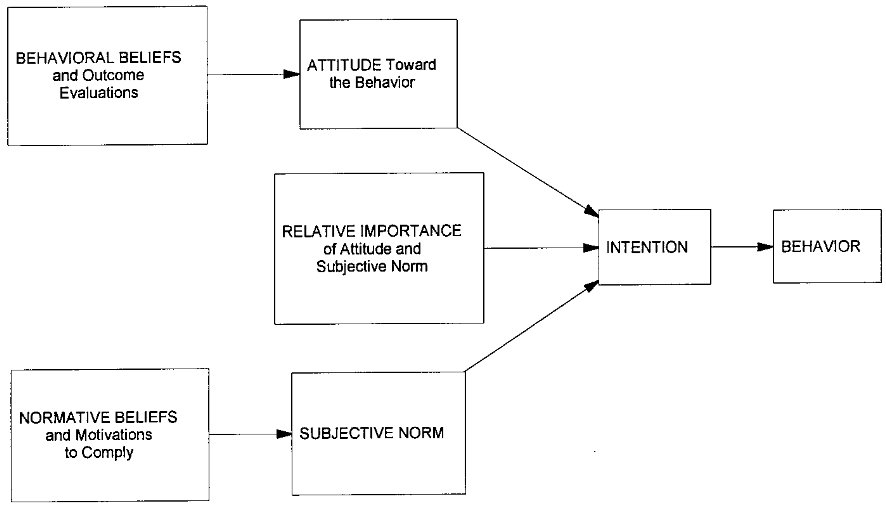

FIGURE 2.1
Theory of Reasoned Action (TRA)

It is interesting to note that factors such as attitudes and demographic characteristics are sometimes related to the behavior of interest, but they do not constitute an integral part of the theory. They are, however, considered external variables that may influence the beliefs a person holds or the relative importance he or she attaches to attitudinal and normative considerations. These external variables could be represented as a box to the left of the behavioral and normative beliefs, with arrows going into each of the belief boxes.

Historical Perspectives Concerning the TRA. There are a number of concepts that comprise the theory of reasoned action. Although knowledge of a person's attitude can tell us little as to whether he or she will perform some particular behavior, it can tell us something about his or her overall pattern of behavior. In the late 1950s, a

multicomponent view of attitude was adopted almost universally. Attitudes were viewed as complex systems comprising the person's beliefs about the object, his or her feelings toward the object, and his or her action tendencies with respect to the object. There was a general consensus for a strong relationship between attitude and behavior (Ajzen and Fishbein, 1980).

Interest in the relationships among beliefs, feelings, and behavioral tendencies led to the development of various theories of attitude organization and change. Collectively known as consistency theories, they assume that individuals strive toward consistency among their beliefs, attitudes, and behaviors. Most of these theories grew out of the work of Fritz Heider in 1944 and 1958, but the theory that attracted most of the attention was Leon Festinger's theory of cognitive dissonance in 1957. According to the theory, inconsistency between two cognitive elements (beliefs, attitudes, or behavior) gives rise to dissonance. Although consistency theories have contributed to our understanding of attitude organization and change, they have done little to explain the observed inconsistencies between attitude and behavior (Ajzen and Fishbein, 1980).

Donald Campbell, in 1963, analyzed the nature of attitudes and other behavioral dispositions, recognizing that attitudes should be related to global patterns of behavior with respect to an object but not necessarily to any given action (Ajzen and Fishbein, 1980). In his work, Campbell concluded that in many studies, the reported failure of attitudes to predict behavior represented pseudo-inconsistencies that have little bearing on the attitude-behavior relation. The negative findings reflect inconsistencies

among different indicants or expressions of an underlying attitude but not the absence of a relation between the underlying attitude and the pattern of a person's behavior (Ajzen and Fishbein, 1980).

Prior to the 1970s, most investigators worked on the assumption that attitudes explain and predict behavior. The investigators devoted much of their effort to descriptive attitude surveys or to controlled experiments dealing with attitude formation and change, with investigations directed at the attitude-behavior relation few and far between. However, by the 1970s, the low empirical relation between attitude and behavior could no longer be neglected. Some investigators, such as Abelson in 1972, simply concluded that attitudes cannot predict behavior, while others, such as Schuman and Johnson in 1976, have suggested that certain behaviors are so dependent on the situational context as to be virtually unpredictable from measures of attitude (Ajzen and Fishbein, 1980). For the most part, however, attitudes continued to be regarded as primary determinants of a person's responses to an object, but at the same time there was a recognition that there is no one-to-one correspondence between attitude and any given behavior. The reliance on other factors to explain observed attitude-behavior inconsistencies is commonly known as the other variables approach. According to this view, attitude is only one of a number of factors that influence behavior, and other variables must also be taken into account. The variables suggested are conflicting attitudes, competing motives, verbal/intellectual/social abilities, individual differences, alternative behaviors available, and expected or actual consequences of the behavior. It is

important to note that the addition of other variables, even if found to improve prediction of behavior, does little to advance our understanding of the attitude-behavior relation itself (Ajzen and Fishbein, 1980).

In conclusion, most investigations concerned with attitude formation and change make no distinctions among belief, feelings, and intentions. Virtually all verbal responses, and sometimes overt actions, are considered to be indicants of a person's attitude, and measures of these variables are often used interchangeably. There is a general agreement that attitude, no matter how assessed, is only one of many factors that influence behavior, and in order to predict behavior accurately we have to take additional variables into account, either as independent contributors to behavior or as moderators of the attitude-behavior relationship. There is consensus today that attitudes toward an object can predict only the overall pattern of behavior (Drescher, 1992; Evans and Taylor, 1995; Vanlandingham et al, 1995; Kurland, 1996); they are of little value if we are interested in predicting and understanding some particular action with respect to the object. To predict a single behavior we have to assess the person's attitude toward the behavior and not his or her attitude toward the target at which the behavior is directed (Ajzen and Fishbein, 1980).

Defining and Measuring Behavior. The criterion of behavior is comprised of four elements: the action, the target at which the action is directed, the context in which it occurs, and the time at which it is performed. Each of these elements can be very specific or more general. The behavioral criterion becomes more general when

different actions of an individual are observed. It is also possible to broaden it by observing one or more actions with respect to different targets, in different contexts, and at different points in time. The nature of the behavioral criterion is defined by the kinds of observations that are made, with all behavioral criteria viewed as measures of one or more single acts. Generally speaking, we can refer to a single action criterion, a behavioral category criterion or a multiple-choice criterion (Ajzen and Fishbein, 1980).

Predicting Behavior from Intention. From a theoretical point of view, intentions determine behaviors. However, this should not be taken to mean that a measure of intention will always be an accurate predictor of behavior. Two factors will influence the strength of the observed relationship between intention and behavior: the degree of correspondence between the measure of intention and the behavioral criterion and the degree to which the intention remains stable over time (Ajzen and Fishbein, 1980).

To predict a behavioral criterion from intention, it is essential to ensure that the measure of intention corresponds to the measure of behavior. In a similar fashion to behaviors, intentions can be viewed as consisting of action, target, context, and time elements. Intention and behavior correspond to the extent that their elements are identical. It is important to ensure that there is a high degree of correspondence between intention and behavior, whether the criterion is a single action or a behavioral category. Lack of correspondence on any of the four elements (action, target, context, and time) can reduce the accuracy of prediction (Ajzen and Fishbein, 1980).

A measure of intention will not always be a good predictor of behavior. Intentions can change over time and a measure of intention taken some time prior to observation of the behavior may differ from the intention at the time that the behavior is observed. Generally speaking, therefore, the longer the time interval, the less accurate the prediction of behavior from intention, that is, the lower the observed relation is between intention and behavior. Intentions that are not stable have to be measured immediately prior to observation of the behavior. When this cannot be done, the measure of intention should be taken as close in time as possible to the behavior. Further, it is sometimes possible to improve prediction by measuring conditional intentions, which take into account extraneous events foreseen by the investigator that might produce changes in intentions. Long-range prediction from intentions will usually be accurate at the aggregate level, even when the measure of intention does not permit accurate prediction of individual behavior (Ajzen and Fishbein, 1980).

It has been noted that although intentions are assumed to be the immediate antecedents of actions, the observed relation between intention and behavior depends on two factors: the measure of intention corresponding to the behavioral criterion (in action, target, context, and time) and the measure of intention will predict behavior only if the intention does not change before the behavior is observed. These considerations apply whether the criterion is a single action, a choice between multiple alternatives, a behavioral category, or an index based on repeated observations. An investigator can ensure high correspondence between intention and behavior by obtaining an appropriate

measure of intention. The intention's stability, however, is not under his or her control. Although it is possible to measure intentions to achieve the outcome, the predictive validity of intentions depends on the extent to which they lead to the performance of behaviors that control the outcome (Ajzen and Fishbein, 1980).

Determinants of Behavioral Intentions. Although different kinds of behavioral criteria can be assessed, they can all ultimately be reduced to one or more single actions. It follows that in order to understand a person's behavior, it is necessary to consider the factors that determine these single actions. A person's intention to perform a given behavior is the immediate determinant of that behavior. According to the theory of reasoned action, the two major factors that determine a person's behavioral intentions include a attitudinal component (personal) and a normative component (social) (Ajzen and Fishbein, 1980).

The attitudinal component refers to the person's attitude toward performing the behavior under consideration. To assess a person's attitude toward a behavior, we could use any of the standard scaling procedures, resulting in a single score which represents a given person's general evaluation or overall feeling of favorableness or unfavorableness toward the behavior in question. Generally, with other things equal, the more favorable a person's attitude is toward a behavior, the more he or she should intend to perform that behavior; the more unfavorable his or her attitude, the more he or she should intend not to perform the behavior (Ajzen and Fishbein, 1980).

The subjective component (subjective norm) deals with the influence of the social environment on intentions and behavior. It refers to the person's perception that most people who are important to him or her think he or she should or should not perform the behavior in question. According to the theory of reasoned action, the more a person perceives that others who are important to him or her think he or she should perform a behavior, the more he or she will intend to do so. That is, other things constant, people are viewed as intending to perform those behaviors they believe are important that others think they should perform (Ajzen and Fishbein, 1980).

It is important to note that for some behaviors, normative considerations (the perceived prescriptions of importance to others) are more important in determining behavioral intentions than are attitudinal considerations (the person's favorable or unfavorable evaluation of his or her performing the behavior). For other behaviors the reverse may be true. In fact, variations in any of the four elements defining the behavior (action, target, context, and time) may influence the relative importance of the attitudinal and normative components. Assuming the appropriate measures are obtained, the attitudinal and normative components should always predict the intention, with their ability to predict the behavior depending upon the strength of the intention-behavior relation. The effects of attitude and subjective norm on behavior are thus mediated by the behavioral intention (Ajzen and Fishbein, 1980).

<u>Determinants of the Attitudinal and Normative Components</u>. If our only purpose is to predict behavior, it is sufficient to measure corresponding behavioral

intentions. For many purposes, it may be sufficient to explain intentions and behavior by reference to attitudes and subjective norms. A deeper understanding of the factors influencing behavior then requires that we look for the determinants of the attitudinal and normative components. A person's attitude toward a behavior is determined by his or her salient beliefs that performing the behavior leads to certain outcomes and by his or her evaluations of those outcomes. In a similar manner, a person's subjective norm is determined by his or her beliefs that specific salient referents think he or she should or should not perform a given behavior and by his or her motivations to comply with those referents. Attitude toward a behavior and subjective norm are both considered to be a function of the weighted sum of the appropriate beliefs. It is essential to ensure correspondence between measures of belief on one hand and measures of attitude and subjective norm on the other. It is important to note that only salient beliefs serve as determinants of attitudes and subjective norms.

Summary and Conclusion of the Theory of Reasoned Action. The theory of reasoned action represents different levels of explanation for people's behavior. At the most global level, a person's behavior is assumed to be determined by his or her intentions. At the next level, the intentions are themselves determined by attitudes toward the behavior and subjective norms. The third level views attitudes and subjective norms in terms of beliefs about the consequences of performing the behavior and about the normative expectations of relevant referents. Finally, a person's behavior is explained by reference to his or her beliefs. Since a person's beliefs represent the information he or

she has about the world, it follows that a person's behavior is ultimately determined by this information (Ajzen and Fishbein, 1980).

As we move from behavior to intention, from intention to attitude toward the behavior and subjective norm, and from these two components to the underlying beliefs, we can gain increasing understanding of the factors determining the behavior under consideration. According to the theory of reasoned action, intention is the immediate determinant of behavior allowing us to predict behavior. Knowing the intention's determinants will not improve the accuracy of our prediction, but provides for better understanding with a causal chain linking beliefs to behavior (Ajzen and Fishbein, 1980).

Behavior involves a choice between two or more alternatives. To completely understand behavior, it is therefore necessary to identify the beliefs related to the performance of each behavioral alternative. The solution of specific problems often requires formulating questions in terms of a single intention and the corresponding behavior. Once this is done, the theory of reasoned action can be used to understand the behavior in question and to suggest ways of changing it (Ajzen and Fishbein, 1980).

Theory of Planned Behavior (TPB). Following the Theory of Reasoned Action, the Theory of Planned Behavior developed. There are many factors that can disrupt the intention-behavior relation. Although volitional control is more likely to present a problem for some behaviors than for others, personal deficiencies and external obstacles can interfere with the performance of any behavior. A conceptual framework that

addresses the problem of incomplete volitional control is Ajzen's theory of planned behavior (Ajzen, 1988). This theory is an extension of the theory of reasoned action, but in contrast, this theory postulates three, rather than two, conceptually independent determinants of intentions. The first two, attitude toward the behavior and subjective norm, are the same. The third antecedent of intention is the degree of perceived behavioral control. This factor refers to the perceived ease or difficulty of performing the behavior and it is assumed to reflect past experience as well as anticipated impediments and obstacles. In general, the more favorable the attitude and subjective norm with respect to behavior, and the greater the perceived behavioral control, the stronger should be the individual's intention to perform the behavior under consideration. It is important to note that this theory does not deal directly with the amount of control a person actually has in a given situation, rather it considers the effects of perceived behavioral control on achievement of behavioral goals. The theory of planned behavior is shown graphically in Figure 1.2 (Ajzen, 1988).

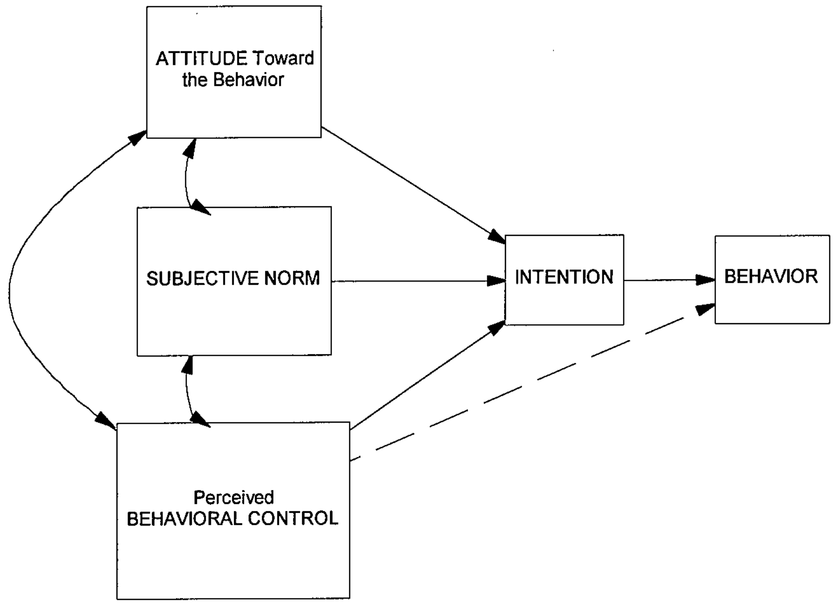

FIGURE 2.2
Theory of Planned Behavior (TPB)

Two important features of the theory of planned behavior are shown in Figure 1.2. First, the theory assumes that perceived behavioral control has motivational implications for intentions. People who believe that they have neither the resources nor the opportunities to perform a certain behavior are unlikely to form strong behavioral intentions to engage in it even if they hold favorable attitudes toward the behavior and believe that others of importance would approve of their performing the behavior. An expected association between perceived behavioral control and intention that is not mediated by attitude and subjective norm is formed. This is represented in Figure 1.2 by the arrow linking perceived behavioral control to intention. The second feature is the possibility of a direct link between perceived behavioral control and behavior. Perceived

behavioral control can influence behavior indirectly, via intentions, and it can also be used to predict behavior directly because it may be considered a partial substitute for a measure of actual control. The dashed line in Figure 1.2 linking perceived behavioral control to behavior represents this second feature of interest (Ajzen, 1988).

The theory of planned behavior postulates that behavior is a function of salient information, or beliefs, relevant to the behavior. A great many beliefs about a given behavior can be held by a person, but attention can be made only to a relatively small number at any given moment. It is these salient beliefs that are considered to be the prevailing determinants of a person's intentions and actions. There are three salient beliefs: behavioral beliefs which are assumed to influence attitudes toward the behavior, normative beliefs which constitute the underlying determinants of subjective norms, and control beliefs which provide the basis for perceptions of behavioral control.

The expectancy-value model of attitudes, as developed by Ajzen and Fishbein (1980), is a cognitive or information-processing approach used by most contemporary social psychologists to analyze attitude formation. According to the model, attitudes develop reasonably from the beliefs people hold about the object of the attitude. From the equation:

$$A \propto \sum_{I=1 \text{ to } n} b_i e_i$$

the strength of each salient belief (b) is combined in a multiplicative fashion with the subjective evaluation (e) of the belief's attribute, and the resulting products are summed

over the n salient beliefs. A person's attitude (A) is directly proportional ($\propto$) to this summative belief index. From the equation:

$$SN \propto \sum_{I=1 \text{ to } n} n_i m_i$$

the strength of each normative belief (n) is multiplied by the person's motivation to comply (m) with the referent in question, and the subjective norm (SN) is directly proportional to the sum of the resulting products across the n salient referents. From the equation:

$$PBC \propto \sum_{I=1 \text{ to } n} c_i p_i$$

each control belief (c) is multiplied by the perceived power (p) of the particular control factor to facilitate or inhibit performance of the behavior, and the resulting products are summed across the n salient control beliefs to produce the perception of behavior control (PBC). The underlying foundation of beliefs (salient beliefs of behavioral, normative, and control) provides the detailed descriptions needed to gain substantive information about a behavior's determinants. It is at the level of beliefs that we can learn about the unique factors that induce one person to engage in the behavior of interest and to prompt another to follow a different course of action (Ajzen, 1991: 192-198).

Like the theory of reasoned action, the theory of planned behavior deals with the antecedents of attitudes, subjective norms, and perceived behavioral control, antecedents which in the final analysis determine intentions and actions. The theory of planned behavior is a general model in which the theory of reasoned action represents a special case. The theory of reasoned action is designed to deal with behaviors over which people

have a high degree of volitional control, and it is assumed that most behaviors of interest in the domains of personality and social psychology fall into the volitional category. The theory of planned behavior, however, explicitly recognizes the possibility that many behaviors may not be under complete control, and the concept of perceived behavioral control is added to handle behaviors of this kind. When the behavioral control approaches its maximum and issues of control are not among an individual's important considerations, however, then the theory of planned behavior reduces to the theory of reasoned action. In those instances, neither intentions nor actions will be affected appreciably by beliefs about behavioral control and the only remaining dispositions of interest are attitude toward the behavior and subjective norm (Ajzen, 1988).

Other Factors Predicting Behavior. Attitudes can be used to predict behavior with considerable success under the appropriate conditions, but there are other variables that can substantially improve prediction. Snyder (1979) found that people low in the personality trait of self-monitoring typically show greater attitude-behavior consistency than people who are high in the trait. Ajzen and Fishbein (1975) have argued that norms, or what other people think about the behavior, are also important considerations for predicting an individual's behavior. Triandis (1980) argues that habit is the most important factor to consider in predicting behavior. All of these factors are important in the understanding of why people behave the way they do, and lead to further development of the theories involved.

Summary of Combinatory Approaches. The combinatory approaches discussed presented an approach to persuasion that focuses on the role of information in changing peoples' attitudes and on how people combine the information they receive into an overall impression. Common to all of the theories is the view that an attitude is based on the information or beliefs that a person has about the attitude object. The probabilistic theories emphasized the interrelationships among a person's beliefs and how the change in one belief could lead to a change in others. The theory of information integration allows description of a wide range of attitudinal phenomena with the fundamental principle that an attitude is best represented as a weighted average of information about an attitude object. The theory of reasoned action views an attitude as a weighted sum of the information that a person had about an attitude object; and it further indicates that a person's behaviors are based on a consideration of one's own attitude and one's perceptions of the views important to others. The theory of planned behavior is an extension of the theory of reasoned action, with the inclusion of a component that measures perceived behavioral control.

Conclusion of General Attitude-Behavioral Theories. The different approaches discussed in understanding attitude change in relation to behavior emphasize different variables and different processes, but all of them contribute to the understanding of how and why people's attitudes change. Although the various theoretical approaches to persuasion and attitude understanding differ in many ways, they indicate that there are only two fundamentally different "routes" to changing a person's attitudes. One route,

which is called the central route, emphasizes the information that a person has about the person, object, or issue under consideration; and the other, which is called the peripheral route, emphasizes just about anything (e.g., consequences of adopting a certain attitude) (Petty and Cacioppo, 1981). The route responsible for persuasion is an important determinant of how enduring the attitude change will be, and changes induced via the central route tend to be more permanent than changes induced via the peripheral route. The theory of planned behavior, which is an extension of the theory of reasoned action, provides a solid framework for understanding and predicting why people behave the way they do, and furthers the comprehension in this body of knowledge.

It must be noted that the classical views of organizations either ignore the individual or they make oversimplified assumptions about him or her. A result of this oversight is the breach between theory and practice in organizations, between the way organizations should work and the way they do work (Tannenbaum, 1966). The Hawthorne (Tannenbaum, 1966) research scientifically documented this important human aspect of organization and made it patently clear that psychological or social psychological principles of behavior were at work. The research also showed that organization theory would somehow have to take these principles into account. The particular motives relevant to the adjustment of organization members include: need for affiliation, ego-relevant motives, power motives, curiosity, security, emotion, and economic motivation (Tannenbaum, 1966). People are driven to express their unique personalities, to gain approval, to achieve status, to experience sentiment or emotion, to

acquire wealth, to give and receive affection, to enhance their egos, to actualize their potentialities, to avoid insecurity, and to satisfy other basic motives -- all of which are interrelated in complex ways (Tannenbaum, 1966). These motives help define a person's self-interest. However, the formal work organization is not ordinarily designed with the members' self-interest in mind. The organization has quite another purpose -- and herein lies a conflict of serious proportions.

Understanding attitudes of workers is important in influencing their behaviors. An attitude is an individual's feeling or opinion about an abstract concept, a material element, or an individual. In effect, it is how a person feels about events, activities, and other people. Attitudes are learned over time, and are influenced by past experiences, environmental stimuli, and present and future expectations (Frunzi and Halloran, 1991). The theory of planned behavior (TPB) is used in this research to understand and predict active duty Air Force members' concerns regarding the environmental behaviors of recycling, energy conservation, and carpooling. This brings further support to the TPB, and provides more understanding towards the influence of attitudes on behavior, and why people behave the way they do.

Organizational Perspective

The attitudes of organizations concerning the environment have steadily increased over the years. Because of staggering pollution levels and the diversity of environmental concerns, a wide range of pressures is bearing down on firms from many sides. There are

regulatory, credibility, market, and financial pressures whose intensities vary by country, industry, sector, and firm. It is clear, however, that firms need to respond in order to ensure further use of scarce resources, public and political legitimacy, profitability, and financial assurance (Fischer and Schot, 1993: 4 - 5). The varied responses of firms to mounting pressures can be categorized in two phases: 1970 to 1985 and 1985 to 1992. "The overall picture in the period from 1970 to 1985 is one of firms resisting adaptation to growing regulatory and public pressures" (Fischer and Schot, 1993: 6). The dominant pattern was a lack of willingness to internalize environmental issues. The mid-1980s brought an embracement of environmental issues without innovation. Several accidents were catalysts for intensified public hostility and distrust, with new regulations and business actions developing. Firms started defining environmental problems as their own responsibility, and as issues that could no longer be ignored. The overall pattern of change in the 1985 - 1992 period can be summarized in three trends: a clear institutionalization of environmental concern within firms, a perception of environmental problems as theirs to solve, and movement beyond a compliance-oriented approach to an innovative approach (Fischer and Schot, 1993: 12). These trends will continue and deepen in the coming decade. During the two phases described, "firms took a wide range of actions that included articulating more firmly their environmental policy statements, creating environmental staff functions, initiating to some extent performance measurement, and developing new technologies and new codes of conduct" (Fischer and

Schot, 1993: 5). These actions were part of a more fundamental pattern of dealing with environmental issues that could be labeled as environmental strategy.

Fischer and Schot (1993) discuss ten significant trends in the "greening" of business that are of importance: the fundamental rethinking of traditional notions of disposability, risk, responsibility, and the right to pollute; the spread of holistic full cost and impact analysis; greater environmental accountability; increased collaborative partnerships between corporations and environmental organizations; increased adoption and formalization of environmental policies; growing chief executive officer and board involvement in corporate environmental stewardship; growing pressure for environmental responsibility coming from company employees, labor unions, and prospective recruits; increased external pressure for environmental performance via tightening of environmental regulations and strengthening of "green" consumerism assisted by product-labeling programs; increased propensity of maverick companies deciding to turn environmental improvement and resource efficiency to their competitive advantage; and expansion of actual and potential legal liability for environmental damage. Examining these trends help us see the new environmental attitudes forming, and allow for a description of the corporate greening process where emphasis is on a choice of an environmental strategy, reform in management systems, organizational change, cultural change, and institutional change (Rasanen et al, 1995: 9). The greening process should incorporate top-down and bottom-up processes of change, where the upper management and the workers can consolidate their ideas. The diversity in the ways of solving

environmental problems are "influenced by the nature of the firm, business sector, and nation state, not to forget the most distinctive aspect of greening, namely the impact of the specific and varying natural conditions in which firms operate" (Rasanen et al, 1995: 16). Environmental problems will be solved first within the existing rules of the game, and then through deeper institutional changes.

A prevailing pattern in industry is transforming or reframing an environmental problem and forced legislated change into a technological problem. Also, the notion of collaboration as a standard solution to tackle environmental problems rather than competing to finding the most apt solution is common (Ostlund, 1994: 32). The focus of the change process is not market driven but of technical specifications and norms tying over competitive boundaries. Mobilization and coordination is made in networking activities that worked to diffuse and legitimize chosen solutions among network members as well as in the political community (Ostlund, 1994: 32). Organizations face increasing demands to measure their environmental performance, which is necessary in order to achieve sustainable development, to reassure financial stakeholders that their investments are not at risk, to satisfy the demands of regulators and other non-financial stakeholders, and to provide information for customers and employees (James, 1994: 59). The enormous complexity of environmental problems, as well as ambiguity and uncertainty regarding what organizational responses and solutions to adopt, is perhaps the largest challenge facing industry today. The challenge remains the “integration of more holistic environmental standards into strategic network behavior to ensure a future sustainable

development, rather than piecemeal technological changes in individual organizations" (Ostlund, 1994: 33).

A dependable system of environmental performance measurement is rooted in the following realities: business activity has an ecological, social, and economic impact; business is increasingly held liable for environmental costs; environmental management is good business; as lower levels of management become increasingly empowered, a reliable environmental reporting and performance measurement system is needed; and, allocation of scarce resources requires persuasive evidence of the relative benefits of doing so (Eckel et al, 1992: 16). A System for Environmental Performance Measurement (SEPM) will be expected to provide the disclosure of environmental obligations and contingencies, the disclosure of environmental risks inherent in the organization's operations, the disclosure of financial risks to the organization, and the separate disclosure of environmental expenditures (Eckel et al, 1992: 16). Environmental performance measures are developed as part of a dynamic planning and control process consisting of developing corporate environmental policy, developing consistent performance measures, designing systems to collect and report information, and implementing the on-going monitoring program (Eckel et al, 1992: 17). The installation of a measurement system is often an evolutionary, rather than revolutionary process, and is designed specifically for each organization. The environmental performance indicators (EPIs) adopted in practice include both accounting and non-financial measures; more specifically, it is possible to classify the indicators as prevention costs and investments,

operating environmental costs, contingent environmental liabilities, physical indicators, or compliance (Azzone and Manzini, 1994: 3). It must be pointed out that no single environmental performance indicator is completely satisfactory on its own; hence, the EPI system of a firm should be designed in an integrated way, taking advantage of the peculiarities of each class of EPI (Azzone and Manzini, 1994: 6). A measure of the environmental performance of a firm is important to assure the effectiveness of strategies aimed at improving the image of the firm towards green consumers and of programs focused on the improvement of corporate efficiency through a reduction of environmental related costs; thus, the introduction of a formal system of environmental performance indicators is an effective policy for a growing number of firms (Azzone and Manzini, 1994: 9).

Individual and societal values with respect to environmental protection have increased significantly, and companies that do not materially adopt environmental values into their corporate value systems will find their culture to be incongruent with the personal values of their employees. Under such circumstances, these employees will face the choice of three sub-optimal options: dissatisfied compliance with the corporate values, resolution to change the corporate values, resignation from the organization (Hoffman, 1993: 10). Those companies able to achieve a congruent fit between individual and organizational values will benefit from higher worker satisfaction, longer tenure, and greater loyalty (Hoffman, 1993: 10). It is important to recognize that "fit" is not a static concept, and that besides managing larger shifts in organizational strategy, the

task of leadership is to strive continually to maximize this fit by maintaining alignments among the various organizational components (Rothenberg et al, 1992: 10).

Environmental thinking is increasingly being integrated into all levels of the organizational decision-making process. Management is beginning to focus not only on end-of-pipe solutions to minimize waste, but also developing programs to reduce the amount of waste being produced. According to Zeffane, there are four factors representing the overall degree of "Corporate Environmental Commitment." These factors are the degree to which environmental audits are emphasized as an environmental evaluation tool (Audit), the existence and role of a clear and well disseminated environmental policy (Policy), consideration of environmental impacts in assessing future corporate activities including investments and projects (Future Activities), and incorporation of environmental issues in corporate appraisal systems (Appraisal Systems) (Zeffane et al, 1994: 17). In the study, Zeffane (1994) found internal consistency within each of the four factors revealing significant reliability of all factors, and the use of the four-factor method will allow firms to assess their environmental commitment (EC) better.

Any definition of EC requires both behavioral and attitudinal attributes. Organizations need to consider both social and economic performance to create a responsible workplace. In particular, businesses attempting to be responsible should invest in commitment rather than compliance to specific environmental regulations (Zeffane et al, 1994: 18). Organizational efficiency and effectiveness are increased by

positive organizational commitment by contributing to resource transformations, innovativeness, and adaptability (Zeffane et al, 1994: 18). At the same time, it will result in the organizations complying with societal values and norms. Thus, shifting the object or actors in the notion of commitment from individuals to organizations will result in the same positive corporate traits at the organizational level.

Organizational commitment for the environment "can be accurately understood as a collection of multiple commitments to various groups that comprise the organization" (Hunt and Morgan, 1994: 1569). There are several constituency-specific commitments that contribute to global organizational commitment, specifically, commitment to top management and commitment to supervisor. It was found by Hunt and Morgan (1994) that organizations benefit from employees' developing constituency-specific commitments and that managers should not fear the development of such commitments.

The concept of EC will bring about an increased realization that organizations' subscriptions to desirable environmental considerations will constitute crucial elements of organizational performance and survival (Zeffane et al, 1994: 18). Commitment to the environment requires that companies do more than simply design and follow a rigorous environmental management system; it requires that firms have structures, practices and policies in place that allow specific environmental objectives to be achieved. Furthermore, being environmentally committed requires that the corporation make all stakeholders aware of the firms' environmentally committed position (Zeffane et al, 1994: 25). Using the constructs (factors) uncovered in Zeffane's study will allow for a

thorough evaluation of EC, and the degree to which environmental concerns are entrenched into the corporate culture.

"Green management" implies the commitment of all members of the corporation. The concept involves: viewing the organization completely rather than as a collection; managing for the long-term success of the organization; a commitment to being the best; committing to quality in all activities of the organization; listening closely to the customer; sustaining enthusiasm and finding solutions through a commitment to employees; and remembering that the organization is part of the community (Taylor, 1992: 670). Through the effective use of green management, the rewards of cost reductions and improved efficiencies, new market outlets, enhanced corporate image, opportunities to sell new products and services, an improved competitive position, a more dedicated and motivated workforce, and the ability to set the agenda for the industry and public policy become realized (Taylor, 1992: 674). Green management provides the link for effectively overcoming any future obstacles, and it makes good business sense because it embodies the principles of good business.

Department of Defense (DoD) Focus

The Department of Defense (DoD) has taken the lead among federal agencies in trying to manage the environment, with the Department of the Air Force leading the other services. According to Secretary of the Air Force Shelia Widnall, "we have an obligation to the American people to practice and promote positive resource stewardship. We

cannot, and must not, train in ways that harm rare plants and animals, or destroy sensitive ecosystems" (Widnall, 1995a: 1). Secretary Widnall goes on to say that:

> We need to consider more than just the recreational and consumptive elements of our natural resources...we now realize...that the environment of our installations is composed of more than just game animals and endangered species. We must take into consideration the variety and variability of the natural communities on our lands...and we must integrate this with our military training mission. (Widnall, 1995a: 1)

The Air Force has long recognized the importance of being good caretakers of the environment, and as Secretary Widnall states, the Air Force is "minimizing the use of hazardous materials, broadening recycling programs, and even incorporating environmental concerns into aircraft design" (Widnall, 1995b: 2). The Air Force's conservation efforts are focused on eliminating environmentally unfriendly material, but if it can't be eliminated, "it should be recycled or reused. If it can't be recycled or reused, it should be treated to reduce its toxicity. And if treatment won't work, it should - as a last resort - be disposed of in an environmentally sound manner" (Widnall and Fogleman, 1995: 2). The behaviors of interest to the government, and particularily the United States Air Force, include recycling, energy conservation, and carpooling at work. These three behaviors were selected because of the concern expressed by the government to become better stewards of the environment.

The Executive Office, under President William J. Clinton, has pushed for more environmentally responsible behavior within the federal government, and has targeted the three behaviors that are addressed above. President Clinton states that "the Nation's interest is served when the federal government can make more efficient use of natural

resources by maximizing recycling and preventing waste wherever possible" (White House, 1993f: 1). The federal government is being pushed by the current administration to further its role as an "enlightened, environmentally conscious and concerned consumer" (White House, 1993f: 1). Because of this, behaviors affecting recycling, energy conservation, and carpooling are becoming more of a concern, and good environmental stewardship is being supported through the issuance of Executive Orders (EOs), Air Force Instructions (AFIs), and other policies (Table 2.1).

Support for environmentally friendly behaviors (recycling, energy conservation, and carpooling) has been demonstrated by the President's Council on Sustainable Development, established under Executive Order (EO) 12852 (White House, 1993d). This council advises the President on matters involving economic growth that will benefit present and future generations without detrimentally affecting the resources or biological systems of the planet. Through this EO, positive behaviors affecting the environment are promoted.

Influencing recycling behavior has strong support throughout the government, and it is the most visible and easily influenced behavior. According to EO 12873:

> Consistent with the demands of efficiency and cost effectiveness, the head of each Executive Agency shall incorporate waste prevention and recycling in the agency's daily operations and work to increase and expand markets for recovered materials through greater federal government preference and demand for such products. (White House, 1993f: 1)

The Air Force has addressed recycling with Air Force Instruction (AFI) 32-7080, which states the Air Force must reduce the amount of material going to landfills by 50 percent

before 1997 (Department of the Air Force, 1994a). This has promoted greater recycling efforts by the Air Force, and has brought the need to better reuse materials than directing those materials for disposal in landfills (Baumer, 1996). Air Force Policy Directive (AFPD) 23-5 also addresses recycling, and provides a policy for the "reutilization and disposal of material in the Air Force" (Department of the Air Force, 1993c: 1). From this policy directive, the "Air Force will meet Federal recycling and pollution prevention objectives by ensuring cost-effective recycling and reuse of material to reduce the volume of material disposed as scrap or waste, and maximize recycling and recovery opportunities" (Department of the Air Force, 1993c: 2). Recycling is a big part of the government's efforts to influence behaviors in an environmentally friendly way, but energy conservation is playing an increasing role as well.

Energy conservation has received substantial attention lately, especially since new advances in technology can reduce the use of energy greatly. Executive Order 12845 states that the "federal government should set an example in the energy efficient operation of its facilities," and promotes energy efficiency in the use of computer equipment (White House, 1993c: 1). Also, according to Executive Order 12902, "each (federal) agency shall develop and implement a program with the intent of reducing energy consumption by 30 percent by the year 2005, based on energy consumption per-gross-square-foot of its building use, to the extent that these measures are cost-effective. The 30 percent reductions shall be measured relative to the agency's 1985 energy use. Each agency's implementation program shall be designed to speed the introduction of

LEGISLATION	***ENVIRONMENTAL BEHAVIOR***
Executive Order 12844	- Carpooling
Executive Order 12845	- Energy Conservation
Executive Order 12852	- Carpooling - Recycling - Energy Conservation
Executive Order 12856	- Recycling
Executive Order 12873	- Recycling
Executive Order 12902	- Energy Conservation
Regional Public Transportation Authority	- Carpooling Promoted
Air Force Instruction (AFI) 32-7080	- Recycling
Air Force Material Command (AFMC) Environmental Protection Goals (Stewart, 1996)	- Recycling - Energy Conservation
Air Force Policy Directive (AFPD) 23-5	- Recycling
Air Force Policy Directive (AFPD) 32-71	- Recycling - Energy Conservation - Carpooling
Air Force Policy Directive (AFPD) 32-73	- Recycling - Energy Conservation
Air Force Pamplet (AFPAM) 36-2241	- Recycling - Energy Conservation - Carpooling

TABLE 2.1
Legislation / Policies Supporting Three Environmental Behaviors

cost-effective, energy efficient technologies into federal facilities, and to meet the goals and requirements of this order" (White House, 1994g: 3). Further, "each agency shall develop and implement a program for its industrial facilities in the aggregate with the intent of increasing energy efficiency by at least 20 percent by the year 2005 as compared

to the 1990 benchmark," and "agencies shall purchase energy-efficient products in accordance with the guidelines issued by the Office of Management and Budget (OMB), in consultation with the Defense Logistics Agency (DLA), Department of Energy (DOE), and General Services Administration (GSA), under section 161 of the Energy Policy Act of 1992" (White House, 1994g: 3). By issuing policies to conserve energy at the workplace, the government is taking big strides in influencing worker behaviors, which also will affect the purchase and use decisions these workers make as well.

Transportation to and from work by carpooling of employees is an area of concern in which the government has had little success in promoting environmentally friendly behavior. The government has issued some legislation and policies, but the effect these directives have seems questionable. Executive Order 12844 calls for each federal agency to "adopt aggressive plans to substantially exceed the alternative fueled vehicle purchase requirements," and to promote responsible awareness among employees in regards to carpooling and using public transportation (White House, 1993b: 1). One case where there seems to be success in the awareness of environmentally friendly transportation to and from work has been from Luke Air Force Base. According to Brigadier General Stephen B. Plummer, 58th Fighter Wing Commander, Luke AFB, "we fly, fight, and share the ride for a free and clean America" (Kuhn, 1995: 25). Luke AFB is typical of bases everywhere that struggle to educate drivers and comply with ever tougher environmental regulations. General Plummer is a strong advocate of carpooling, especially since the base is under a mandate by the state of Arizona to reduce single-

occupancy rate by 5 percent each year. Many bases throughout the Air Force are coming under the mandates of the community to reduce air pollution, thus carpooling and using public transportation are becoming increasingly important. There are federal funds available through the Regional Public Transportation Authority to assist and promote carpooling, showing the importance the government places on clean air.

Air Force Material Command (AFMC) leads the Air Force in environmental initiatives and research in the protection of the planet. The command has five major programs for protecting the environment: assess consequences of each major action, comply with all federal, state, and local laws, reduce or eliminate hazardous materials, clean up past practices, and protect the current resources (Stewart, 1996). "AFMC's (and the Air Force) environmental protection strategy of the future focuses on pollution prevention" (Stewart, 1996: 2). The strategy comprises four steps: eliminate or reduce hazardous or pollutant materials, recycle or reuse pollutants that can't be eliminated, treat pollutants that can't be recycled, and dispose of materials safely if they cannot be eliminated or recycled (Stewart, 1996). AFMC's environmental protection goals and its vision for the future involves "quality people working in a quality environment to produce quality systems for America's Air Force" (Stewart, 1996: 2).

Protecting the environment is a corporate stewardship responsibility. It is everyone's business. By examining the environmental behaviors of recycling, energy conservation, and carpooling at work, behaviors of Air Force members may be further understood in order to influence them in an environmentally responsible manner.

Conclusion and Summary of Literature Review

Environmental attitudes have steadily increased from the 1960s to the present. By examining the environmental attitudes, general attitude-behavioral theories, organizational perspectives, and the Department of Defense (DoD) focus in relation to the environment, attitudes and behaviors of individuals and organizations can be understood and controlled. The environmental attitudes of the public concerning the environment are centered around the NEP, with many still embracing the outdated DSP. The DSP and NEP help show the shift in environmental attitudes in the late 1960s, and the reason why the environment remains a top priority today. Differences in attitudes based on gender, education, and age were examined. Overall, women, the well educated, and the younger generations have a general tendency to favor the environment; however, most people feel that there needs to be some kind of protection for the environment. The development of general attitude-behavioral theories has helped identify why people act in a particular manner, and through an examination of past research it has been shown that several theoretical approaches exist that have helped enlighten the psychological processes involved. The theory of reasoned action is one framework, and an important one, that is based on the assumption that human beings are usually quite rational and make systematic use of the information available to them. Human social behavior is viewed as not being controlled by unconscious motives, overpowering desires, or thoughtlessness. Rather, people engage in a given behavior only after they have considered the implications of their actions. The theory of planned behavior is another theoretical

framework that is an extension of the theory of reasoned action, but in contrast, this theory postulates three, rather than two, conceptually independent determinants of intentions. The first two, attitude toward the behavior and subjective norm, are the same. The third antecedent of intention is the degree of perceived behavioral control. This factor refers to the perceived ease or difficulty of performing the behavior and it is assumed to reflect past experience as well as anticipated impediments and obstacles. In general, the more favorable the attitude and subjective norm with respect to behavior, and the greater the perceived behavioral control, the stronger should be the individual's intention to perform the behavior under consideration. Along with the two theoretical frameworks, consistency, aggregation, and the effect of moderating variables are discussed. Organizational perspectives concerning the environment have followed the public's attitudes, but at a slower pace. Business was initially slow in stepping on the bandwagon, but has shifted lately to a more proactive stance. Because of the pressures from government and the public, business has reformed its practices, leaning towards a pro-environmental attitude. The Department of Defense (DoD) focus, specifically the Department of the Air Force, is concerned with many environmental matters, and has focused some of its efforts with three environmental behaviors: recycling, energy conservation, and carpooling efforts. Because of this concern, these behaviors were the focus of this research.

The environment is drastically changing because of man's presence, and it is up to man to guarantee the safety of the environment for future generations. By examining the

attitudes and behaviors concerning the environment, it can be seen that society is facing up to the challenges the environment poses, and is making the needed changes in order to protect if for future generations.

In order to better understand why people behave the way they do, the Theory of Planned Behavior (TPB) was examined in detail. An organization's influence on individual behavior at work was also investigated. From the extensive review of the literature, the Organizational Theory of Planned Behavior (OTPB) was developed based on the TPB, as well as from the literature addressing organizational influence. The OTPB provides the framework for measuring behavior at work, in an organizational setting.

III. METHODOLOGY

This research effort consisted of developing a questionnaire to measure environmentally responsible behavior for the direct predictor variables of the Theory of Planned Behavior (TPB) in relation to the criterion variables of recycling, energy conservation, and carpooling at work. The TPB assumes people are usually quite rational and make systematic use of the information available to them, and addresses the antecedents to behavior: attitude toward the behavior, subjective norm, and perceived behavioral control. According to the TPB, other variables, such as demographics, are not important in the explanation of behavior; however, for purposes of generalizability, basic demographic data were gathered (Ajzen and Fishbein, 1975, 1980). Additional components were added to the TPB model to address behaviors **at work**, forming the Organizational Theory of Planned Behavior (OTPB). The OTPB included an individual's economic motivation, awareness programs, the organizational commitment, and resource-facilitating conditions at work. Assessment of the questionnaire was conducted through a limited study at Wright-Patterson Air Force Base, Ohio. The data collected was used to explain and predict why Air Force members behave, or do not behave, in an environmentally responsible manner at work, and the extent which demographic variables play a role in the attitudes and behavior developed.

Questionnaire Development

A 69-item questionnaire was developed by the author to predict environmental behaviors and measure demographic information. Guidelines established by Ajzen and Fishbein (1980) and Ajzen (1991) aided in the development of the TPB survey questions, and the additional components that form the OTPB were addressed throughout the literature (Geller et al, 1982; McClelland and Canter, 1981; Arcury, 1990; Marans et al, 1992; Oskamp et al, 1991; Vining and Ebreo, 1992) supported the development of the OTPB survey questions. A complete copy of the questionnaire is provided in Appendix A, and the methods used in the development of the questionnaire can be found in Appendix D. The development of the questionnaire is presented below in two separate sections. First, environmental behaviors are discussed in relation to the criterion variables of recycling, energy conservation, and carpooling. Second, generalizations concerning the collection of the demographic variables are discussed.

Environmental Behaviors. The Organizational Theory of Planned Behavior (OTPB) was used to assess environmental behaviors in the work environment, a modification of the Theory of Planned Behavior (TPB). The components that make up the OTPB are shown in Figure 3.1, with the addition of economic motivation, awareness programs, resource-facilitating conditions, and organizational commitment. These additional components will help in the prediction and understanding of attitudes and perceived behavioral control within an organizational framework.

There has been extensive research on the use of monetary incentives as reinforcers of behavior, but there is no clear consensus on the durability of economic motivation (Lee et al, 1995). Monetary reinforcers generally are reliable at initiating conservation behavior (Geller et al, 1982), although there have been findings to the contrary (McClelland and Canter, 1981).

The development and implementation of organizational environmental awareness programs at work help promote environmentally responsible behavior (Arcury, 1990; De Young, 1985 - 1986; Hoffman, 1993; Hunt and Morgan, 1994). Through awareness programs, organizations can have a significant impact on employee behaviors, especially with respect to the behaviors of recycling, energy conservation, and carpooling to work.

The resource-facilitating conditions at work play an essential role in the influence of employee behavior. There must be an infrastructure in place to serve the recycling, energy conservation, and carpooling needs of the employees if a high level of participation is to take place (Marans et al, 1992; Marans and Lee, 1993). The main issue here is one of convenience, with prior research indicating the facilitating conditions as barriers to behavioral control.

Finally, the commitment of the organization plays a key role in the influence of individual behavior. Without adequate information or concern by the organization, behavioral influence over employees will be minimal (Oskamp et al, 1991; Vining and Ebreo, 1992).

Prediction and understanding behavior is the ultimate goal of the TPB. The first step toward this goal is to identify and measure the behavior of interest. Once the behavior has been defined, it is then necessary to ask what determines the behavior. A person's intention to perform (or to not perform) a behavior is the immediate determinant of the action. According to the TPB, a person's intention is a function of three basic determinants: one personal in nature, another reflecting social influence, and one based on volitional control (Ajzen, 1988). The personal factor is the individual's positive or negative evaluation of performing the behavior; this factor is termed attitude toward the behavior. The second determinant of intention is the person's perception of the social pressures put on him or her to perform or not perform the behavior in question; this factor, since it deals with perceived prescriptions, is termed subjective norm. The third and final determinant of intention is the degree of perceived behavioral control. This factor refers to the perceived ease or difficulty of performing the behavior and it is assumed to reflect past experience as well as anticipated impediments and obstacles. It is important to note that this theory does not deal directly with the amount of control a person actually has in a given situation, rather it considers the effects of perceived behavioral control on achievement of behavioral goals. In general, the more favorable the attitude, subjective norm, and perceived behavioral control with respect to behavior, the stronger should be the individual's intention to perform the behavior under consideration. Individuals will perform a behavior when they evaluate it positively and when they believe that others think they should perform it (Ajzen and Fishbein, 1980).

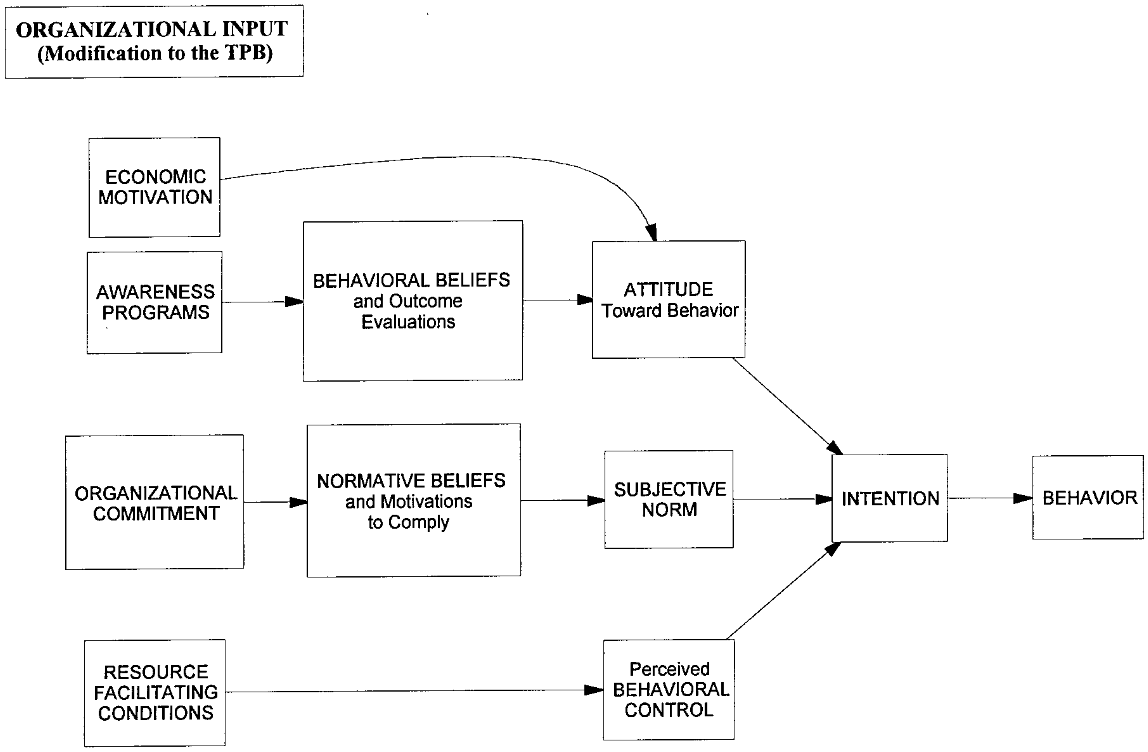

FIGURE 3.1
Organizational Theory of Planned Behavior (OTPB)

The predictors of environmental behaviors were accomplished using the TPB format, and 57 items were used to measure three behaviors at work: recycling, energy conservation, and carpooling decisions. These three behaviors were addressed in each component of the OTPB, which included the behavior of interest, intentions, attitude toward the behavior, subjective norm, perceived behavioral control, behavioral beliefs, normative beliefs, control beliefs, and the additional items of economic motivation, awareness programs, resource-facilitating conditions, and organizational commitment.

The simplicity of the model derives from its assumption that all other sources of influence on behavior are moderated by the three predictor variables (attitude, subjective norm, and perceived behavioral control). Thus, one could accurately predict whether or not an Air Force member will behave in an environmentally responsible manner (recycle, conserve energy, carpool) at work through knowledge of that person's intent. One could predict intent through knowledge of that individual's attitude towards recycling, energy conservation, and carpooling at work, the subjective norm the Air Force member holds, and how much control the person believes he or she has over the behaviors. Behavioral beliefs and normative beliefs were measured as well, consistent with past operationalizations of the TPB (Randall, 1994).

The three behaviors of recycling, energy conservation, and carpooling at work were selected because of the concern expressed by the federal government, as well as the United States Air Force, to become a better steward of the environment. "We have an obligation to the American people to practice and promote positive resource stewardship. We cannot, and must not, train in ways that harm rare plants and animals, or destroy sensitive ecosystems" (Widnall, 1995a: 1).

The portion of the survey addressing environmental behavior through the use of TPB and the three criterion variables was introduced to the respondents in the following manner: "We would like to get your opinion on a variety of items that relate to behavior. Please read the list and use the following scale to indicate how often that you make an effort to do each of the items." Each of the items was accompanied by the following

scale of five responses: (1) Never, (2) Seldom, (3) Occasionally, (4) Most of the Time, and (5) Always. Also, the following scale of five responses was used: (1) Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree, and (5) Strongly Agree. The Likert Scale was used to measure responses, with each item of the questionnaire developed from the TPB and from this researchers investigation of the literature (Ajzen and Fishbein, 1980; Lee et al, 1995; Arcury, 1990; De Young, 1985 - 1986; Hoffman, 1993; Hunt and Morgan, 1994; Marans et al, 1992; Marans and Lee, 1993; Oskamp et al, 1991; Vining and Ebreo, 1992). Respondents assigned scores on an automated scoring sheet such that a one meant the respondent "Never" acted in the manner specified (or "Strongly Disagree" with the question), a two meant the respondent acted in the manner specified "Seldom" (or "Disagree" with the question), and so on. A clear picture of the breakdown of the questions corresponding to the individual components of the OTPB is shown below in Appendix I.

Demographics. There has been a great deal of effort and research done to measure the correlation between environmental concern and demographic variables (e.g. Van Liere and Dunlap, 1981; Scott and Willits, 1994). In this research study, the demographic variables of gender, education, and age are addressed to examine if a relationship exists with responsible environmental behavior and intention. In general, the literature suggests that women, the well educated, and the young express the greatest environmental concern (Abbott and Harris, 1985; Gutteling and Wiegman, 1993; Steger et al, 1989; Arcury et al, 1987; Mohai, 1992; Ostman and Parker, 1987; Honnold, 1984).

Questionnaire Deployment

Once the questionnaire was developed with environmental behaviors and demographics investigated, a pre-pilot test (first iteration) was done in order to assess the structure, readability, and general concerns in the questionnaire. Next, a small pilot test (second iteration) was conducted among a sample of students at the Air Force Institute of Technology (AFIT). From here, a main study (third iteration) among active duty Air Force members stationed at Wright-Patterson Air Force Base was accomplished. The study was conducted in accordance with the techniques devised and tested by Dillman (1978) and Air University (1993). Air Force members were administered the questionnaire in controlled classroom settings, at their homes, and at their place of work. The selection of participants was completely random. Air Force members queried ranged from E1 through O6, and from a variety of military career fields.

The use of first term airmen were discounted because, in many instances, they have not made a firm commitment to the Air Force; therefore, their values and beliefs probably do not coincide with those held by the general Air Force public. General officers were not queried because they may not have the same values and beliefs that are typically held by other officers (Marumoto, 1988), and the Air Force Personnel Center (AFPC) at Randolph Air Force Base, Texas, does not believe that general officers should be queried due to the inconvenience.

First Iteration (Pre-Pilot Test). In order to make the questionnaire easier to understand and administer, a pre-pilot test was conducted. This pre-pilot test's purpose

was to assess the general readability of the questionnaire, with a focus on correct grammar usage. Ten individuals were asked to comment on the questionnaire, and to provide answers to the questions in order that the statistical programs could be written. Results and comments from the pre-pilot test aided greatly in improving the survey, and making it more "user-friendly."

Second Iteration (Pilot Test). A second iteration was conducted to determine the statistical reliability of the items in the Organizational Theory of Planned Behavior (OTPB) questionnaire, with the reliability estimated using Cronbach's Alpha in order to assess the internal consistency of the items measuring each variable. Also, descriptive statistics were analyzed in order to see how the responses were distributed (see Appendix B). A sample of 26 active duty Air Force members assigned to the Air Force Institute of Technology (AFIT) at Wright-Patterson AFB, OH were used in the pilot test.

Statistical Analysis of Questionnaire

"The field of statistical analysis is concerned with the collection, organization, and interpretation of data according to well-defined procedures" (Kachigan, 1991: 1). The use of statistics in questionnaire analysis is paramount, and provides useful insights into the responses of the sampled population. The overall objective of statistical analysis is to make observations of the world, convert those observations to numbers, manipulate and organize the results, and then interpret and translate the results back to a world that is now hopefully more orderly and understandable than prior to the data analysis (Kachigan,

1991). This process of drawing conclusions and understanding more about the sources of our data is the goal of statistical analysis in its broadest sense.

Constructs Measured, Reliability, and Validity. Evaluation of the items used in the questionnaire was conducted in order to determine the constructs measured by the questionnaire, the reliability of the items, and the validity of the items. The Statistical Analysis System (SAS©) software, Version 6.08, was used to accomplish all of the statistical calculations used throughout this study.

Reliability. The internal consistency of the items (reliability) in the questionnaire were estimated in order to determine if the items within each factor warranted continued use in the study. Cronbach's alpha was calculated in order to estimate the reliability of the items. From previous research, Cronbach's alpha ranged from .76 to .93 for components of the Theory of Planned Behavior (TPB) (Randall, 1994; Wankel et al, 1994).

Reliability is a major application of correlation analysis, and essentially means reproducibility of measurements made on a set of objects. If measurements on a set of objects cannot be replicated, we must conclude that the scores are extremely unstable or that the score obtained by each object was a matter of chance. "The reliability of our measurements should be the first question asked of any data analysis, for if the raw data have no meaning, what possible meaning could the summary statistics have" (Kachigan, 1991: 140).

The reliability estimates for the factors in the pilot questionnaire are shown in Appendix F. Reliability's were not a concern in the pre-pilot test, due to the fact that the pre-pilot test was concerned with grammar and general readability only. For the pilot test, each of the subscales had sufficient levels of reliability to warrant further use during the main study.

The reliability estimates for the factors of the third iteration (main study) are shown in Table 3.1. Each of the subscales had sufficient levels of reliability to provide for a consistency among the responses, and to provide the needed correlation with what is being measured.

The energy conservation subjective norm questions had the greatest reliability (Cronbach's Alpha) of .94552, and the recycling resource facilitating conditions questions had the least reliability (Cronbach's Alpha) of .48430. Averaging the subscale items together for recycling, energy conservation, and carpooling, the subjective norm questions produced the highest correlation of .93318, and the normative belief questions produced the lowest correlation of .61340. Refer to Table 3.2 below for a breakdown of the averages for each subscale. Note that the averages were made simply by summing the reliability items for all the behaviors concerning each subscale, then dividing by the total number of behaviors (three). For a complete breakdown of the SAS© output for the reliability analysis, refer to Appendix F.

FACTOR	SUBSCALE	CRONBACH'S ALPHA
RecAtt1 RecAtt2	Recycling Attitude	.90537
EnAtt1 EnAtt2	Energy Conservation Attitude	.88231
CarAtt1 CarAtt2	Carpooling Attitude	.90272
RecSN1 RecSN2	Recycling Subjective Norm	.93934
EnSN1 EnSN2	Energy Conservation Subjective Norm	.94552
CarSN1 CarSN2	Carpooling Subjective Norm	.91466
RecBC1 RecBC2	Recycling Perceived Behavioral Control	.78221
EnBC1 EnBC2	Energy Conservation Perceived Behavioral Control	.80183
CarBC1 CarBC2	Carpooling Perceived Behavioral Control	.87262
RecBB1 RecBB2	Recycling Behavioral Belief	.88162
EnBB1 EnBB2	Energy Conservation Behavioral Belief	.92773
CarBB1 CarBB2	Carpooling Behavioral Belief	.82364
RecNB1 RecNB2	Recycling Normative Belief	.56248
EnNB1 EnNB2	Energy Conservation Normative Belief	.63852
CarNB1 CarNB2	Carpooling Normative Belief	.63919
RecOC1 RecOC2 RecOC3	Recycling Organizational Commitment	.83737
EnOC1 EnOC2 EnOC3	Energy Conservation Organizational Commitment	.92260
CarOC1 CarOC2 CarOC3	Carpooling Organizational Commitment	.93327
RecRFC1 RecRFC2	Recycling Resource Facilitating Conditions	.48430
EnRFC1 EnRFC2	Energy Conservation Resource Facilitating Conditions	.67730
CarRFC1 CarRFC2	Carpooling Resource Facilitating Conditions	.86663

TABLE 3.1
Subscale Reliability for Third Iteration (Main Study)

SUBSCALE	AVERAGE CRONBACH'S ALPHA
Attitude	.89680
Subjective Norm	.93317
Perceived Behavioral Control	.81889
Behavioral Belief	.87766
Normative Belief	.61340
Organizational Commitment	.89775
Resource Facilitating Conditions	.67608

TABLE 3.2
Subscale Reliability Averages for Third Iteration (Main Study)

Factor Analysis. To determine the dimensionality and construct validity of the survey instrument, confirmatory factor analysis was used. Confirmatory factor analysis was used because the survey is building off a model already developed and supported in the literature -- the Theory of Planned Behavior. Orthogonal rotation (Varimax) was used in conjunction with factor analysis because the technique redefines the factors, creating very distinctive factors and leads to either very high (close to 1.0) or very low (near 0) factor loadings. More meaningful conclusions can be drawn from the results, and clear definitions of the behaviors that are being measured by the questionnaire can be derived by redefining the factors using this technique (Kachigan, 1991). The twelve demographic questions and fifty-seven behavioral items were factor analyzed independently.

Factor analysis "is a family of procedures for removing the redundancy from a set of correlated variables and representing the variables with a smaller set of 'derived' variables, or factors" (Kachigan, 1991: 237). Applications of factor analysis include identification of factors underlying a large set of variables, screening of variables for

inclusion in subsequent statistical investigations, providing a summary of the data so as to extract as few or as many factors as desired from a set of variables, providing for a technique in selection of a small group of representative, though uncorrelated variables from among a larger set in order to solve a variety of practical problems (sampling), and to cluster objects or people (Kachigan, 1991).

In a factor matrix, cell entries are called factor loadings, and vary in value from -1.00 to +1.00. The factor loadings represent the degree to which each of the variables correlates with each of the factors, and are nothing more than the correlation coefficients between the original variables and the newly derived factors (Kachigan, 1991: 243). The factor loadings reveal the extent to which each of the variables contributes to the meaning of each of the factors. Those variables with high factor loadings provide the meaning and interpretation of the factor, while those with low factor loadings will not contribute to the meaning of the factor, but rather will tend to contribute to the meaning of one of the other factors by virtue of their high loadings on those factors (Kachigan, 1991).

Results of the factor analysis using the principal components method are shown in Appendix F and below in Table 3.3 (for the main study only). The loadings for each item on each of the factors is identified in the following discussion.

The factor loading data suggests that the fifty-seven items in the questionnaire measure eleven distinct components. This result is consistent with other studies examining the Theory of Planned Behavior (TPB) (Randall, 1994; Ajzen, 1991). Also, the addition of the economic motivation, awareness programs, organizational

commitment, and resource facilitating condition components that form the Organizational Theory of Planned Behavior (OTPB) are also supported by the factor loading data (Appendix F). The factor loadings rotated with a varimax orthogonal rotation are shown in Table 3.3. Because of the small sample size (307) in this study, the results of the factor analysis are not conclusive. However, grouping of the 57-items with the eleven factors can be made on a subjective basis. Factor 1 is represented by the behavioral belief component, factor 2 by the behavior and awareness program items, factor 3 by the subjective norm items, factor 4 by the organizational commitment items, factor 5 by the attitude items, factor 6 by the perceived behavioral control items, factor 7 by the normative belief items, factor 8 by the resource facilitating conditions, factor 9 by the intentions, factor 10 by the carpooling perceived behavioral control items and carpooling resource facilitating condition items, and factor 11 is represented by the economic motivation items. The variance explained by each factor is shown in Table 3.4.

VARIMAX ROTATED FACTOR PATTERN*

	FACTOR1	FACTOR2	FACTOR3	FACTOR4	FACTOR5	FACTOR6
RECBEH1	36	54 *	17	-18	3	20
ENBEH1	30	13	15	8	5	4
CARBEH1	3	-2	6	1	79 *	-7
RECINT1	46 *	44 *	12	-26	4	16
ENINT1	34	11	15	-3	4	3
CARINT1	8	1	6	-7	78 *	-5
RECATT1	73 *	17	7	-14	6	14
RECATT2	74 *	18	11	-11	8	17
ENATT1	65 *	-10	23	2	13	9
ENATT2	60 *	-7	21	10	18	10
CARATT1	25	0	-1	2	72 *	2
CARATT2	24	2	4	8	69 *	4
RECSN1	14	31	80 *	-2	2	-3
RECSN2	14	28	83 *	-7	0	-1
ENSN1	1	12	83 *	4	6	-9
ENSN2	1	9	82 *	4	9	-9
CARSN1	3	-12	40 *	38	43 *	13
CARSN2	8	-13	36	34	42 *	11
RECBC1	9	5	-9	-7	7	75 *
RECBC2	12	23	-2	-12	1	75 *
ENBC1	2	-10	-5	-3	-8	83 *
ENBC2	8	-7	3	7	-4	81 *
CARBC1	15	13	-6	-9	-3	20
CARBC2	7	11	-10	-4	-17	13
RECBB1	80 *	7	-1	-9	-7	7
RECBB2	85 *	4	-1	-9	3	4
ENBB1	80 *	-10	11	9	4	-5
ENBB2	83 *	-5	8	3	8	-2
CARBB1	61 *	-6	-6	2	32	-7
CARBB2	58 *	-10	-3	-6	33	4
RECNB1	19	52 *	48 *	-8	-3	-1
RECNB2	9	20	32	3	-8	3
ENNB1	14	20	64 *	18	10	4
ENNB2	5	12	34	4	-6	-7
CARNB1	14	-12	17	36	34	11
CARNB2	10	-3	22	22	15	5
RECEM1	-38	-9	-3	16	7	-2
ENEM1	-36	-6	-3	20	12	1
CAREM1	-28	7	-5	12	-16	-2
RECAP1	8	74 *	13	0	-5	4
ENAP1	-2	59 *	8	19	0	0
CARAP1	-4	8	-3	61 *	4	5
RECOC1	-1	74 *	7	30	-1	4
RECOC2	-2	70 *	19	33	-5	1
RECOC3	-6	67 *	34	36	2	-8
ENOC1	-10	55 *	18	49 *	4	-7
ENOC2	-8	47 *	18	58 *	3	-7
ENOC3	-12	45 *	26	56 *	6	-10
CAROC1	-8	14	1	81 *	-1	-2
CAROC2	-5	19	-6	85 *	-1	-6
CAROC3	-4	18	0	83 *	1	-8
RECRFC1	8	7	6	-14	-21	1
RECRFC2	6	-7	-2	2	-3	-2
ENRFC1	7	-6	4	1	-9	-6
ENRFC2	-5	-8	-6	8	-3	-6
CARRFC1	15	16	-23	1	28	-4
CARRFC2	15	11	-23	-3	29	-1

* Printed values are multiplied by 100 and rounded to the nearest integer. Values greater than 40 have been flagged by an '*'.

TABLE 3.3
Varimax Rotated Factor Loadings

VARIMAX ROTATED FACTOR PATTERN*

	FACTOR7	FACTOR8	FACTOR9	FACTOR10	FACTOR11
RECBEH1	-27	-13	22	-6	21
ENBEH1	3	-12	74 *	5	12
CARBEH1	-9	-12	13	11	0
RECINT1	-22	-4	38	-6	17
ENINT1	-3	-8	74 *	-3	5
CARINT1	-6	-15	6	2	2
RECATT1	-8	11	11	-6	-7
RECATT2	-13	13	16	-12	2
ENATT1	0	4	39	-5	-1
ENATT2	-6	7	39	-10	2
CARATT1	17	-9	4	-29	0
CARATT2	12	-6	-4	-29	-1
RECSN1	2	-3	-6	-8	7
RECSN2	4	-3	0	-6	-2
ENSN1	14	3	25	1	-14
ENSN2	17	1	28	-1	-15
CARSN1	6	1	-28	-26	16
CARSN2	0	-2	-32	-27	12
RECBC1	-4	1	2	17	-3
RECBC2	6	6	11	24	-5
ENBC1	3	-5	-5	-3	5
ENBC2	-5	-13	1	-1	2
CARBC1	2	4	4	76 *	8
CARBC2	6	4	0	77 *	5
RECBB1	4	-1	5	6	-12
RECBB2	7	1	5	9	-14
ENBB1	15	-6	9	13	-18
ENBB2	14	-5	9	12	-21
CARBB1	19	9	-18	1	-4
CARBB2	17	2	-19	-3	-15
RECNB1	10	7	-9	7	20
RECNB2	75 *	-4	-6	8	13
ENNB1	31	2	7	5	10
ENNB2	80 *	1	11	9	5
CARNB1	18	5	-27	-17	41 *
CARNB2	64 *	-4	-14	-8	29
RECEM1	11	1	6	5	75 *
ENEM1	14	2	5	7	75 *
CAREM1	5	4	9	9	62 *
RECAP1	8	-7	3	-2	1
ENAP1	20	0	31	9	-8
CARAP1	17	-18	9	-13	13
RECOC1	4	-13	-1	4	0
RECOC2	9	1	-9	2	-7
RECOC3	1	3	0	5	-5
ENOC1	10	0	24	19	-10
ENOC2	7	4	27	21	-15
ENOC3	9	5	30	18	-13
CAROC1	2	-4	-4	-6	17
CAROC2	1	7	-6	-5	13
CAROC3	-5	9	-8	-4	10
RECRFC1	-3	64 *	-9	5	-9
RECRFC2	5	78 *	-1	-9	13
ENRFC1	-4	79 *	-5	7	-5
ENRFC2	6	82 *	1	-1	7
CARRFC1	50 *	21	6	-49 *	-3
CARRFC2	48 *	20	8	-43 *	-9

* Printed values are multiplied by 100 and rounded to the nearest integer. Values greater than 40 have been flagged by an '*'.

TABLE 3.3 (continued)
Varimax Rotated Factor Loadings

VARIANCE EXPLAINED BY EACH FACTOR					
FACTOR1	FACTOR2	FACTOR3	FACTOR4	FACTOR5	FACTOR6
6.593998	4.618843	4.593407	4.514055	3.362281	2.797270
FACTOR7	FACTOR8	FACTOR9	FACTOR10	FACTOR11	
2.754423	2.640898	2.604288	2.342677	2.339559	

TABLE 3.4
Variance Explained by Each Factor

Validity. Content validity implies that the items reflect the domain that is being measured, and it is not determined using statistical techniques; instead, it is determined through a review of the literature and review of previous research in the area being studied (Emory, 1980). The use of factor analysis contributes to this effort by revealing which items are highly correlated with specific behaviors.

Based on the research done by Icek Ajzen (1991) with the Theory of Planned Behavior, the behavioral items in the questionnaire were assumed to have strong validity. From Ajzen's investigations of the use of his TPB in predicting behavior, it was found that many studies correlated strongly (Chapman et al, 1995; Randall, 1994; Wankel et al, 1994). The combinations of intentions and perceived behavioral control permitted significant prediction of behavior in each of the studies examined by Ajzen, with an average correlation among the studies of .51 (Ajzen, 1991). It was concluded then that the 69-items in the environmental behavior scale would adequately assess the extent of an individual's environmental behavior.

Statistics Used to Analyze Environmental Behaviors and Demographic Variables. The use of statistical techniques to analyze environmental behaviors and the role of the demographic variables of gender, age, and education will help paint a better picture of how Air Force members feel and behave with respect to the environment. Below is a discussion of each of these items, and the statistical methods used in the evaluation of the data.

Environmental Behaviors. Descriptive statistics (means, standard deviations, correlation coefficients) were used to analyze the extent to which Air Force members participated in environmentally friendly behaviors based on the antecedents of behavior. Also, composite scores for each subscale (as determined by factor analysis) were calculated by summing the scores of relevant items. A high composite score for a particular subscale demonstrated a pro-environmental behavior, while a low composite score indicated a lack of participation. The correlation coefficient, represented with the letter r, measures the degree of association between two variables, and can range from -1.00 to +1.00. A correlation coefficient of r = +1.00 signifies a perfect positive linear relationship, with the paired values on the respective variables being exactly equal in terms of standardized z scores. A correlation coefficient of r = -1.00 indicates a perfect negative or inverse linear relationship between two variables. In this case, an object's standardized score on each variable would be identical in absolute value and differ in sign only (Kachigan, 1991). Rarely, if ever, though, will two variables have perfect correlations of -1.00 or +1.00.

There are certain key assumptions for the use of correlation coefficients. First, the correlation coefficient *r* is only appropriate for measuring the degree of relationship between variables which are linearly related. Second, the variables measured must be random variables that are measured on either an interval or ratio scale. And the third major assumption for the use of the correlation coefficient is that the two variables have a joint normal distribution (Kachigan, 1991).

"Whereas correlation analysis provides us with a summary coefficient of the extent of relationship between two variables, **regression analysis** provides us with an equation describing the nature of the relationship between two variables. In addition, regression analysis supplies variance measures which allow us to assess the accuracy with which the regression equation can predict values on the criterion variable, making it more than just a curve-fitting technique" (Kachigan, 1991: 160). The overall objectives of regression analysis is to determine whether or not a relationship exists between two variables, to describe the nature of the relationship in the form of a mathematical equation, to assess the degree of accuracy of description or prediction achieved by the regression equation, and in the case of multiple regression, to assess the relative importance of the various predictor variables in their contribution to variation in the criterion variable (Kachigan, 1991).

The relationships between components of the Organizational Theory of Planned Behavior (OTPB) model were examined using hierarchical regression and step-wise regression. Survey assessed intention was regressed on attitude, subjective norm, and

perceived behavioral control toward recycling, energy conservation, and carpooling. As recommended by Ajzen (1991), attitude and subjective norm were entered in the first stage, followed by perceived behavioral control. To predict attitude, attitude was regressed on behavioral belief and economic motivation. To predict subjective norm, subjective norm was regressed on normative belief. To predict perceived behavioral control, perceived behavioral control was regressed on resource-facilitating conditions. Also, prediction of behavioral beliefs was regressed on awareness programs and prediction of normative beliefs was regressed on organizational commitment.

Demographic Variables of Gender, Age, and Education. The relationship that the demographic variables of gender, age, and education have on a person's attitude and behavior were examined using descriptive statistics. Ajzen and Fishbein (1975) claimed that little information can be obtained by the consideration of the demographic variables. However, for purposes of generalizability, basic demographic data was gathered (e.g., gender, age, and education).

A difference of means test was calculated to assess the relationship between a member's gender to the intention and behavior of the member to recycle, conserve energy, and carpool to work. Also, an analysis of variance (ANOVA) was conducted to identify and measure the various sources of variation within the collected data. A single-factor, one-way, ANOVA was done to identify the relationships between the criterion variables (environmental behaviors and intentions - recycling, energy conservation, and carpooling) to the predictor variables (demographic variables of education and age).

IV. ANALYSIS

The purpose of the analysis section is to discuss the results of the third iteration (main study) conducted at Wright-Patterson AFB, OH. A new model that focuses on the organization is developed from a review of the literature and the use of the TPB. This new model is called the Organizational Theory of Planned Behavior (OTPB). The third iteration, the main study, was conducted in order to assess the Organizational Theory of Planned Behavior (OTPB), and its ability to predict intentions and behavior. For the complete breakdown of the statistical code used in the analysis (SAS©), as well as the output of that code and the raw data, please refer to Appendix E, Appendix F, and Appendix G.

Third Iteration (Main Study)

A sample of 307 active duty Air Force members assigned to Wright-Patterson AFB, OH were used in the main study. Statistical analysis was conducted which produced reliability and factor analysis (see Chapter 3), descriptive statistics (N, Mean, Standard Deviation), regression, t-test, and ANOVA results.

Descriptive Statistics. Descriptive statistics are presented in Table 4.1, and include the number of samples (N), mean, standard deviation, and sum. From the descriptive statistics, we can see how the respondents averaged on their responses to the questions. Respondents tended to agree among the factors for each subscale. However,

the mean of responses to carpooling questions differed from the mean of responses to the recycling and energy conservation questions. Again, this was expected due to the apparent lack of emphasis on carpooling today.

FACTOR	SUBSCALE	N	MEAN	Std Dev	MEAN Scale Sum
RecAtt1 RecAtt2	Recycling Attitude	307 307	4.5114 4.4235	0.6333 0.6930	4.9
EnAtt1 EnAtt2	Energy Conservation Attitude	307 307	4.3844 4.2801	0.6382 0.7092	4.6
CarAtt1 CarAtt2	Carpooling Attitude	307 307	2.7622 2.8469	1.2650 1.2806	5.5
RecSN1 RecSN2	Recycling Subjective Norm	307 307	3.2932 3.3355	0.9032 0.8602	6.6
EnSN1 EnSN2	Energy Conservation Subjective Norm	307 307	3.3681 3.3518	0.8734 0.8856	6.7
CarSN1 CarSN2	Carpooling Subjective Norm	307 307	2.5114 2.5016	0.8869 0.9016	5.0
RecBC1 RecBC2	Recycling Perceived Behavioral Control	307 307	3.9055 3.8730	1.1264 1.1261	7.7
EnBC1 EnBC2	Energy Conservation Perceived Behavioral Control	307 307	3.6710 3.5961	1.1257 1.1113	7.1
CarBC1 CarBC2	Carpooling Perceived Behavioral Control	307 307	4.2541 4.1270	1.0003 1.1462	8.3
RecBB1 RecBB2	Recycling Behavioral Belief	307 307	4.3062 4.4625	0.7567 0.6962	8.7
EnBB1 EnBB2	Energy Conservation Behavioral Belief	307 307	4.3094 4.4039	0.7445 0.6858	8.7

TABLE 4.1
Descriptive Statistics for Third Iteration (Main Study)

FACTOR	SUBSCALE	N	MEAN	Std Dev	MEAN Scale Sum
CarBB1 CarBB2	Carpooling Behavioral Belief	307 307	3.8176 3.9446	1.0783 0.9869	7.7
RecNB1 RecNB2	Recycling Normative Belief	307 307	3.3257 2.7850	0.8621 1.0095	6.1
EnNB1 EnNB2	Energy Conservation Normative Belief	307 307	3.2150 2.7980	0.7958 0.9726	6.0
CarNB1 CarNB2	Carpooling Normative Belief	307 307	2.984 2.4072	0.8180 0.9184	5.3
RecOC1 RecOC2 RecOC3	Recycling Organizational Commitment	307 307 307	3.2704 3.2280 3.2215	1.1210 0.9902 0.9851	9.7
EnOC1 EnOC2 EnOC3	Energy Conservation Organizational Commitment	307 307 307	3.0847 3.0684 3.0977	1.0062 0.9316 0.9550	9.2
CarOC1 CarOC2 CarOC3	Carpooling Organizational Commitment	307 307 307	2.2769 2.3550 2.4072	0.9692 0.9468 0.9602	5.1
RecRFC1 RecRFC2	Recycling Resource Facilitating Conditions	307 307	4.2443 3.3322	0.9123 1.1828	7.5
EnRFC1 EnRFC2	Energy Conservation Resource Facilitating Conditions	307 307	3.7687 3.1954	1.0171 1.1059	6.9
CarRFC1 CarRFC2	Carpooling Resource Facilitating Conditions	307 307	3.0293 3.1661	1.3657 1.3939	6.1

TABLE 4.1 (continued)
Descriptive Statistics for Third Iteration (Main Study)

Regression. Regression is accomplished using hierarchical and step-wise methods to test the hypothesized relationships between constructs in the Theory of Planned Behavior (TPB) and the added components that make-up the Organizational Theory of Planned Behavior (OTPB). Appendix E has the complete statistical code (SAS©) used in the analysis, and Appendix F has the complete output for the regression methods.

The hierarchical regression outputs are shown in Table 4.2. The results support the TPB, with the environmental behaviors of recycling, energy conservation, and

	BETA	R Square	Adjusted R Square
Predicting Behavior (Dep) from Intention (Independent Variable)			
Recycling Intention	0.7649	0.5851	0.5837
Energy Conservation Intention	0.7067	0.4996	0.4980
Carpooling Intention	0.7563	0.5719	0.5705
Predicting Intention from Attitude (Att), Subjective Norm (SN), and Perceived Behavioral Control (BC)			
Recycling Attitude	0.4861	0.3690	0.3628
Recycling Subjective Norm	0.1599		
Recycling Perceived Behavioral Control	0.1795		
Energy Conservation Attitude	0.4674	0.2880	0.2833
Energy Conservation Subjective Norm	0.1684		
Energy Conservation Perceived Behavioral Control	*		
Carpooling Attitude	0.4288	0.2216	0.2139
Carpooling Perceived Behavioral Control	0.0548		
Carpooling Subjective Norm	-0.0544		
Predicting Attitude (Att) from Behavioral Belief (BB) and Economic Motivation (EM)			
Recycling Behavioral Belief	0.6015	0.4422	0.4385
Recycling Economic Motivation	-0.1295		
Energy Conservation Behavioral Belief	0.5566	0.3098	0.3075
Energy Conservation Economic Motivation	*		
Carpooling Behavioral Belief	0.3776	0.1872	0.1819
Carpooling Economic Motivation	-0.1376		

* Variable did not meet the 0.5000 significance level for entry into the model.

** $p < .05$

TABLE 4.2
Hierarchical Regression

	BETA	R Square	Adjusted R Square
Predicting Subjective Norm (SN) from Normative Belief (NB)			
Recycling Normative Belief	0.5065	0.2565	0.2541
Energy Conservation Normative Belief	0.5487	0.3011	0.2988
Carpooling Normative Belief	0.5737	0.3291	0.3269
Predicting Perceived Behavioral Control (BC) from Resource Facilitating Conditions (RFC)			
Recycling Resource Facilitating Conditions	*	*	*
Carpooling Resource Facilitating Conditions	-0.1965	0.0386	0.0355
Predicting Behavioral Belief (BB) from Awareness Programs (AP)			
Recycling Awareness Programs	0.0918	0.0084 (not significant)	0.0052
Energy Conservation Awareness Programs	*	*	*
Carpooling Awareness Programs	*	*	*
Predicting Normative Beliefs (NB) from Organizational Commitment (OC)			
Recycling Organizational Commitment	0.4295	0.1845	0.1818
Energy Conservation Organizational Commitment	0.3672	0.1349	0.1320
Carpooling Organizational Commitment	0.2881	0.0830	0.0800

* Variable did not meet the 0.5000 significance level for entry into the model.
** $p < .05$

TABLE 4.2 (continued)
Hierarchical Regression

carpooling predicted from intention. The intentions account for 59%, 50%, and 57% of the variance respectfully. Predicting intentions from attitude, subjective norm, and perceived behavioral control also supports the TPB, with variances of 37% for recycling, 29% for energy conservation, and 22% for carpooling. The regression analysis also reveals that, of the three correlates of intention, attitude towards the behavior has the

strongest relationship among the three behaviors (recycling beta = .4861, energy conservation beta = .4674, and carpooling beta = .4288).

The OTPB suggests attitude will be predicted by behavioral belief and economic motivation. In this study, behavioral belief and economic motivation account for 44% of the variance in recycling attitude, 31% of the variance in energy conservation attitude, and 19% of the variance in carpooling attitude. From the betas, it is seen that the behavioral beliefs have the strongest relationship (recycling beta = .6015, energy conservation beta = .5566, and carpooling beta = .3776). Prediction of subjective norm from normative beliefs also supports the TPB. Normative beliefs account for 26% of the variance in recycling subjective norm, 30% of the variance in energy conservation subjective norm, and 33% of the variance in carpooling subjective norm. The beta values of .5065, .5487, and .5737 for recycling, energy conservation, and carpooling further support the model.

The Organizational Theory of Planned Behavior (OTPB) is not well supported from the hierarchical regression. Predicting perceived behavioral control from resource facilitating conditions and predicting behavioral beliefs from awareness programs showed little to no success (see Table 4.2). However, prediction of normative beliefs from organizational commitment **did** support the OTPB. Organizational commitment accounts for 19% of the variance in recycling normative beliefs, 14% of the variance in energy conservation normative beliefs, and 8% of the variance in carpooling normative beliefs. Betas for the three are .4295, .3672, and .2881 respectively.

Step-wise regression is used to further support hierarchical regression. The results of the step-wise regression can be seen in Table 4.3, and are almost identical to the hierarchical regression output. Thus, the step-wise regression method further supports the claims made under the hierarchical regression model.

	BETA	**R Square**	**Adjusted R Square**
Predicting Behavior (Dep) from Intention (Independent Variable)			
Recycling Intention	0.7649	0.5851	0.5837
Energy Conservation Intention	0.7069	0.4996	0.4980
Carpooling Intention	0.7563	0.5719	0.5705
Predicting Intention from Attitude (Att), Subjective Norm (SN), and Perceived Behavioral Control (BC)			
Recycling Attitude	0.4861	0.3690	0.3628
Recycling Subjective Norm	0.1599		
Recycling Perceived Behavioral Control	0.1795		
Energy Conservation Attitude	0.4699	0.2883	0.2813
Energy Conservation Subjective Norm	0.1656		
Energy Conservation Perceived Behavioral Control	-0.0179		
Carpooling Attitude	0.4288	0.2216	0.2139
Carpooling Perceived Behavioral Control	0.0548		
Carpooling Subjective Norm	-0.0544		
Predicting Attitude (Att) from Behavioral Belief (BB) and Economic Motivation (EM)			
Recycling Behavioral Belief	0.6015	0.4422	0.4385
Recycling Economic Motivation	-0.1295		
Energy Conservation Behavioral Belief	0.5582	0.3098	0.3052
Energy Conservation Economic Motivation	0.0048		
Carpooling Behavioral Belief	0.3776	0.1872	0.1819
Carpooling Economic Motivation	-0.1376		

* $p < .05$

TABLE 4.3
Step-Wise Regression 1

	BETA	R Square	Adjusted R Square
Predicting Subjective Norm (SN) from Normative Belief (NB)			
Recycling Normative Belief	0.5065	0.2565	0.2541
Energy Conservation Normative Belief	0.5487	0.3011	0.2988
Carpooling Normative Belief	0.5737	0.3291	0.3269
Predicting Perceived Behavioral Control (BC) from Resource Facilitating Conditions (RFC)			
Recycling Resource Facilitating Conditions	0.0151	0.0002 (not significant)	-0.0030
Energy Conservation Resource Facilitating Conditions	-0.1117	0.0125 (not significant)	0.0092
Carpooling Resource Facilitating Conditions	-0.1965	0.0386	0.0355
Predicting Behavioral Belief (BB) from Awareness Programs (AP)			
Recycling Awareness Programs	0.0918	0.0084 (not significant)	0.0052
Energy Conservation Awareness Programs	0.0356	0.0013 (not significant)	-0.0020
Carpooling Awareness Programs	0.0020	0.0000 (not significant)	-0.0033
Predicting Normative Beliefs (NB) from Organizational Commitment (OC)			
Recycling Organizational Commitment	0.4295	0.1845	0.1818
Energy Conservation Organizational Commitment	0.3672	0.1349	0.1320
Carpooling Organizational Commitment	0.2881	0.0830	0.0800

* $p < .05$

TABLE 4.3 (continued)
Step-Wise Regression 1

A second step-wise regression step (Table 4.4) is accomplished that further strengthens the TPB. Predicting behavior (the predictor variable) from intention, attitude, subjective norm, perceived behavioral control, behavioral beliefs, normative beliefs,

economic motivation, awareness programs, organizational commitment, and resource facilitating conditions (the criterion variables) is done in one step. An R-Square of .6315 for recycling, which is all of the criterion variables accounting for 63% of the variance in the behavior, results. Also, all of the criterion variables account for 57% of the variance

	BETA	R Square	Adjusted R Square
Predicting Behavior (Dep) from Intention, Att, SN, BC, BB, NB, EM, AP, OC, and RFC (Independent Variables)			
Recycling Intention	0.6763	0.6315	0.6190
Recycling Attitude	0.0094		
Recycling Subjective Norm	0.0692		
Recycling Perceived Behavioral Control	0.0673		
Recycling Behavioral Beliefs	0.0269		
Recycling Normative Beliefs	-0.0191		
Recycling Economic Motivation	0.0092		
Recycling Awareness Programs	0.0480		
Recycling Organizational Commitment	0.1459		
Recycling Resource Facilitating Conditions	-0.0478		
Energy Conservation Intention	0.6130	0.5674	0.5528
Energy Conservation Attitude	0.0076		
Energy Conservation Subjective Norm	0.0256		
Energy Conservation Perceived Behavioral Control	0.0528		
Energy Conservation Behavioral Beliefs	0.1756		
Energy Conservation Normative Beliefs	0.0007		
Energy Conservation Economic Motivation	0.1299		
Energy Conservation Awareness Programs	0.0861		
Energy Conservation Organizational Commitment	0.0974		
Energy Conservation Resource Facilitating Conditions	-0.0535		
Carpooling Intention	0.7227	0.5841	0.5701
Carpooling Attitude	0.0780		
Carpooling Subjective Norm	0.0617		
Carpooling Perceived Behavioral Control	0.0584		
Carpooling Behavioral Beliefs	-0.0055		
Carpooling Normative Beliefs	-0.0345		
Carpooling Economic Motivation	0.0120		
Carpooling Awareness Programs	-0.0038		
Carpooling Organizational Commitment	0.0470		
Carpooling Resource Facilitating Conditions	0.0100		

* $p < .05$

TABLE 4.4
Step-Wise Regression 2

	BETA	R Square	Adjusted R Square
Predicting Intention (Dep) from Att, SN, BC, BB, NB, EM, AP, OC, and RFC (Independent Variables)			
Recycling Attitude	0.4703	0.4089	0.3910
Recycling Subjective Norm	0.0982		
Recycling Perceived Behavioral Control	0.1515		
Recycling Behavioral Beliefs	0.0276		
Recycling Normative Beliefs	0.0049		
Recycling Economic Motivation	0.0130		
Recycling Awareness Programs	0.2109		
Recycling Organizational Commitment	-0.0296		
Recycling Resource Facilitating Conditions	-0.0730		
Energy Conservation Subjective Norm	0.0963		
Energy Conservation Perceived Behavioral Control	-0.0129		
Energy Conservation Behavioral Beliefs	0.0099		
Energy Conservation Normative Beliefs	0.0122		
Energy Conservation Economic Motivation	-0.0529		
Energy Conservation Awareness Programs	0.1509		
Energy Conservation Organizational Commitment	0.0453		
Energy Conservation Resource Facilitating Conditions	-0.0886		
Carpooling Attitude	0.4445	0.2318	0.2085
Carpooling Subjective Norm	0.0859		
Carpooling Perceived Behavioral Control	-0.0654		
Carpooling Behavioral Beliefs	0.0587		
Carpooling Normative Beliefs	-0.0468		
Carpooling Economic Motivation	0.0313		
Carpooling Awareness Programs	0.0029		
Carpooling Organizational Commitment	-0.0335		
Carpooling Resource Facilitating Conditions	-0.0784		

* $p < .05$

TABLE 4.4 (continued)
Step-Wise Regression 2

in energy conservation behavior and 41% of the variance in carpooling behavior. The beta values provide the needed evidence that behavior is predicted by intention (see Table 4.4). A beta value of .6763 for recycling intention, .6130 for energy conservation intention, and .7227 for carpooling intention are well above the next highest beta value, which varies for the three behaviors.

The second step-wise regression also supports the prediction of intention (predictor variable) from attitude, subjective norm, perceived behavioral control, behavioral beliefs, normative beliefs, economic motivation, awareness programs, organizational commitment, and resource facilitating conditions (the criterion variables). All of the criterion variables account for 41% of the variance in recycling intention, 33% of the variance in energy conservation intention, and 23% of the variance in carpooling intention. The beta values support attitude as having the strongest relationship to intention, with a beta value for recycling attitude of .4703, .4526 for energy conservation attitude, and .4445 for carpooling attitude.

From the hierarchical and step-wise regression methods, it has been shown that the Theory of Planned Behavior (TPB) is well supported by this research. This result is consistent with other studies examining the Theory of Planned Behavior (TPB) (Randall, 1994; Ajzen, 1991). The Organizational Theory of Planned Behavior (OTPB) has been shown to demonstrate some deficiencies, but the prediction of normative beliefs from organizational commitment looks promising.

T-Test. A further understanding of the relationship of environmental behaviors and intentions between men and women is accomplished using the T-Test. From Figure 4.1 and 4.2, it is clear that women show a greater behavior and intention to carpool to work than men. Because the Prob>F` of 0.0000 and the Prob>|T| of .0315 for carpooling behavior is less than the Pvalue of .05, there is a significant difference between men's and

T-TEST Results for Behavioral Items

Variable: RECBEH1

Variances	T	DF	Prob>|T|
Unequal	0.9549	53.6	0.3439
Equal	1.1942	305.0	0.2333

For H0: Variances are equal, F' = 1.91
DF = (45,260) Prob>F' = 0.0019

Variable: ENBEH1

Variances	T	DF	Prob>|T|
Unequal	0.7003	57.6	0.4866
Equal	0.7735	305.0	0.4398

For H0: Variances are equal, F' = 1.33
DF = (45,260) Prob>F' = 0.1816

Variable: CARBEH1

Variances	T	DF	**Prob>|T|**
Unequal	-2.2128	50.4	**0.0315**
Equal	-3.2026	305.0	0.0015

For H0: Variances are equal, F' = 3.02
DF = (45,260) **Prob>F' = 0.0000**

FIGURE 4.1
T-Test Results for Behavior

women's scores. Also, because the Prob>F` of 0.0142 and the Prob>|T| of .0360 for carpooling intention is less than the Pvalue of .05, there is a significant difference between men's and women's scores. Refer to Figures 4.1 and 4.2 for further information on the demographic distribution.

T-TEST Results for Intention Items

Variable: RECINT1

Variances	T	DF	Prob>|T|
Unequal	-0.2044	58.9	0.8387
Equal	-0.2185	305.0	0.8272

For H0: Variances are equal, F' = 1.21
DF = (45,260) Prob>F' = 0.3674

Variable: ENINT1

Variances	T	DF	Prob>|T|
Unequal	-0.0701	56.8	0.9444
Equal	-0.0789	305.0	0.9371

For H0: Variances are equal, F' = 1.41
DF = (45,260) Prob>F' = 0.1086

Variable: CARINT1

Variances	T	DF	**Prob>|T|**
Unequal	-2.1500	54.8	**0.0360**
Equal	-2.5736	305.0	0.0105

For H0: Variances are equal, F' = 1.68
DF = (45,260) **Prob>F' = 0.0142**

FIGURE 4.2
T-Test Results for Intention

Analysis of Variance (ANOVA). A further understanding of the relationship of environmental behaviors and intentions to education and age is accomplished with the Analysis of Variance (ANOVA) statistical technique (refer to Appendix E for the SAS© ANOVA code used and refer to Appendix F for all of the SAS© ANOVA outputs). Use of the ANOVA allows a determination whether there is a difference between respondents' education and age levels with respect to their environmental behavior and intention. Results were analyzed using a one-way ANOVA, between-groups design. The relation education has to the environmental behaviors of recycling, energy conservation, and carpooling is shown in Table 4.5. For recycling, since the P Value is much greater than the alpha of 0.05, do not reject the null that there is no difference between subjects

education level with respect to their mean recycling behavior. There is no statistically significant variance. For energy conservation, since the P Value is less than the alpha of 0.05, and F Value is large, reject the null that there is no difference between subjects education level with respect to their mean energy conservation behavior. There is statistically significant variance, thus Tukey's HSD (Honestly Significant Difference) Test is conducted. And for carpooling, since the P Value is less than the alpha of 0.05, and F Value is large, reject the null that there is no difference between subjects education level with respect to their mean carpooling behavior. There is statistically significant variance, thus Tukey's HSD (Honestly Significant Difference) Test is conducted.

Environmental Behavior	**F Value**	**Pr > F (P Value)**
Recycling	0.62	0.6856
Energy Conservation	3.62	0.0034
Carpooling	2.57	0.0270

TABLE 4.5
ANOVA Results for Education-Behavior Relationship

It appears that education level has no effect on recycling behavior, but does affect energy conservation and carpooling behavior. Those individuals with an associate degree or some college education participate more frequently in energy conservation than individuals with high school, bachelors, some graduate, or graduate educations. The cut-off from the Tukey HSD test reveals that there is a clear separation of groups between the

4.0256 mean level for some college education and the 3.5889 mean level for some graduate education. Also, individuals with some college education participate more frequently in carpooling than those with high school, associate, bachelors, some graduate, or graduate educations. The cut-off from the Tukey HSD test reveals that there is a clear separation of groups between the 1.8974 mean level for some college education and the 1.5294 mean level for an associate education.

The relation age has to the environmental behaviors of recycling, energy conservation, and carpooling is shown in Table 4.6. For recycling, since the P Value is much greater than the alpha of 0.05, <u>do not reject</u> the null that there is no difference between subjects age level with respect to their mean recycling behavior. There is no statistically significant variance. For energy conservation, since the P Value is less than the alpha of 0.05, and F Value is large, <u>reject</u> the null that there is no difference between subjects age level with respect to their mean energy conservation behavior. There is statistically significant variance, thus Tukey's HSD (Honestly Significant Difference) Test is conducted. And for carpooling, since the P Value is much greater than the alpha of 0.05, <u>do not reject</u> the null that there is no difference between subjects age level with respect to their mean carpooling behavior. There is no statistically significant variance. It appears that age level has no effect on recycling and carpooling behaviors, but does affect energy conservation behavior. Those individuals who are older appear to participate more frequently in energy conservation than other individuals of lesser years. The cut-off from the Tukey HSD test reveals that there is a separation of groups, but the

exact separation is unclear. It is clear from the mean distribution, however, that those older seem to participate in energy conservation behavior more often than those younger.

Environmental Behavior	**F Value**	**Pr > F (P Value)**
Recycling	1.67	0.1738
Energy Conservation	3.04	0.0291
Carpooling	1.38	0.2498

TABLE 4.6
ANOVA Results for Age-Behavior Relationship

The relation education has to the environmental intentions of recycling, energy conservation, and carpooling is shown in Table 4.7. For recycling, since the P Value is much greater than the alpha of 0.05, <u>do not reject</u> the null that there is no difference between subjects education level with respect to their mean recycling intention. There is no statistically significant variance. For energy conservation, since the P Value is greater than the alpha of 0.05, <u>do not reject</u> the null that there is no difference between subjects education level with respect to their mean energy conservation intention. There is no statistically significant variance, but because of the close Pvalue with the alpha, Tukey's HSD (Honestly Significant Difference) Test is conducted. And for carpooling, since the P Value is much greater than the alpha of 0.05, <u>do not reject</u> the null that there is no difference between subjects education level with respect to their mean carpooling intention. There is no statistically significant variance.

Environmental Behavior	F Value	Pr > F (P Value)
Recycling	1.67	0.1416
Energy Conservation	1.98	0.0810
Carpooling	1.60	0.1601

TABLE 4.7
ANOVA Results for Education-Intention Relationship

It appears that education level has no effect on recycling and carpooling intentions, but does affect energy conservation intention. Those individuals who have an associate degree appear to have a greater intention to participate more frequently in energy conservation than those with other forms of education. Although the ANOVA test did not reject the null that there is no difference between subjects education level with respect to their mean energy conservation intention, the Tukey HSD test did show that there was a distinct break-out among respondents. The cut-off from the Tukey HSD test reveals that there is a separation of groups between those with an associate degree at a mean value of 4.4706 and those with other educational backgrounds at a mean value of 4.1026.

The relation age has to the environmental intentions of recycling, energy conservation, and carpooling is shown in Table 4.8. For recycling, since the P Value is much greater than the alpha of 0.05, do not reject the null that there is no difference between subjects age level with respect to their mean recycling intention. There is no statistically significant variance. For energy conservation, since the P Value is less than

the alpha of 0.05, and F Value is large, reject the null that there is no difference between subjects age level with respect to their mean energy conservation intention. There is statistically significant variance, thus Tukey's HSD (Honestly Significant Difference) Test is conducted. And for carpooling, since the P Value is much greater than the alpha of 0.05, do not reject the null that there is no difference between subjects age level with respect to their mean carpooling intention. There is no statistically significant variance.

Environmental Behavior	**F Value**	**Pr > F (P Value)**
Recycling	1.10	0.3512
Energy Conservation	3.74	0.0115
Carpooling	0.12	0.9499

TABLE 4.8
ANOVA Results for Age-Intention Relationship

It appears that age level has no effect on recycling and carpooling intentions, but does affect energy conservation intention. Those individuals who are older than 46 years appear to have a greater intention to participate more frequently in energy conservation than those younger. The cut-off from the Tukey HSD test reveals that there is a separation of groups at a mean value of 4.4444 for those over 46 years of age and a mean value of 4.1034 for those younger.

V. CONCLUSIONS

The goal of this research project was to develop a survey instrument based on the Theory of Planned Behavior (TPB) developed by Icek Ajzen. A survey was developed from questions in the literature and from questions devised by this researcher to assess the individual environmental behaviors of recycling, energy conservation, and carpooling efforts at work, and how the antecedents of behavior predict the willingness of a person to act. The information collected was used to determine if the TPB is supported, and whether the additional components added to the model support the Organizational Theory of Planned Behavior (OTPB). Also, the demographic variables of gender, age, and education were analyzed to draw general conclusions about the makeup of the respondents, and whether demographics play a role in predicting behavior. The following section discusses the conclusions drawn from the data collected from Air Force members at Wright-Patterson AFB, limitations of the study, and recommendations for future research.

Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB) is well supported by this research effort. The environmental behaviors of recycling, energy conservation, and carpooling of Air Force members at work accurately supports the constructs in the TPB. Through the use of the Statistical Analysis Software (SAS©), statistics were generated that resemble other research efforts (Randall, 1994; Ajzen, 1991).

Regression was used to describe the nature of the relationship between two variables. In addition, regression analysis supplies variance measures which allow us to assess the accuracy with which the regression equation can predict values on the criterion variable. Analysis was accomplished using the hierarchical and step-wise regression methods, producing virtually identical results. Predicting behavior from intention accounted for the greatest variance among the three behaviors of recycling, energy conservation, and carpooling. Predicting intention from attitude, subjective norm, and perceived behavioral control accounted for a significant variance, with attitude having the strongest relationship with intention, as expected. Further, prediction of the subjective norm from normative beliefs accounted for significant variance. Prediction of attitude from behavioral beliefs and economic motivation provided for significant variance, but because economic motivation was an added component to the TPB, it provided for no relationship to attitude towards the behavior. The strongest relationship was accounted for from the TPB behavioral beliefs construct.

Overall, the TPB is well supported by this research effort. With the use of regression techniques provided by SAS©, prediction of the components in the TPB is accomplished. Behavior and intentions of Air Force members **are** influenced by attitude, subjective norm, perceived behavioral control, behavioral beliefs, and normative beliefs towards the behavior in question (recycling, energy conservation, carpooling).

Organizational Theory of Planned Behavior (OTPB)

Although the TPB is supported by this research effort, the Organizational Theory of Planned Behavior (OTPB), for the most part, is not. The components that were added to the TPB to establish an organizational framework were economic motivation, awareness programs, organizational commitment, and resource facilitating conditions. Although these constructs are important in an organizational context, their particular influence on the TPB components is not clear. Results from the hierarchical and step-wise regression techniques used in SAS© produced inconclusive results. Prediction of perceived behavioral control from resource facilitating conditions and prediction of behavioral beliefs from awareness programs with the regression procedure in SAS© did not predict significant variance. Although the influence of these two OTPB items were negligible, the influence of organizational commitment on normative beliefs did predict variance. Prediction of normative beliefs, a component of the TPB, from organizational commitment, a component of the OTPB, with the regression procedure in SAS© resulted in variances of 19%, 14%, and 8% for the behaviors of recycling, energy conservation, and carpooling respectively. The OTPB components were further supported by the strong relationship exhibited by the standardized beta values of .4295 for recycling, .3672 for energy conservation, and .2881 for carpooling.

In general, the OTPB is not well supported by this research effort. However, the components that make up the OTPB are well supported in the literature as important factors in an organizational setting. The exact nature of the influence of the OTPB

constructs on the TPB constructs is not clear, with the exception of the organizational commitment construct's influence on normative beliefs. The negative results of the OTPB constructs are probably due to the small sample in relation to the number of variables, and the inadequate placement of the items of the OTPB in relation to the constructs of the TPB.

Demographic Variables of Gender, Age, and Education

The relationship of the demographic variables of gender, age, and education provides an insight into important characteristics of society that influence behaviors and intentions of individuals at work. Through the use of a statistical technique called the T-Test, it is shown that women show a greater tendency to carpool to work than men, and are more likely to participate in the behavior. Because women show a greater tendency to carpool to work than men, programs within the Air Force should try and understand this and promote a greater awareness among men. Overall, however, carpooling scores for both men and women were quite low. The Air Force definitely needs to improve its programs to include carpooling efforts, as was further exhibited by the frequency tables for the carpooling scores (Appendix C).

The relationship that education and age have on predicting environmental behaviors and intentions (recycling, energy conservation, and carpooling) at work was examined using a statistical technique called an analysis of variance (ANOVA). It was shown that education has an affect on energy conservation and carpooling behavior at

work. Those with an associate degree or some college education participated in energy conservation more readily than those with other forms of education (high school, bachelors, some graduate, graduate). Those with some college education also show a tendency to participate in carpooling more readily than those who have other formal educational backgrounds. Overall, it appears that having some form of college education does promote better environmental behavior at work, especially with energy conservation and carpooling behaviors.

The age of an individual influences his or her energy conservation behavior at work, with those who are older participating more readily in the behavior. Although recycling and carpooling behaviors did not show a statistically significant difference between age groups, there is a tendency by those who are older to participate more readily in an environmentally friendly behavior at work.

The education level and age of an individual influences his or her intentions to conserve energy at work. Those individuals with an associate degree and who are older show intentions towards participating in energy conservation. Although recycling and carpooling intentions did not show a statistically significant difference between education and age groups, there appears to be a tendency (intention) by those who are older to participate more readily in an environmentally friendly behavior at work.

Limitations of Study

As with any research effort, there are inherent conditions that place limitations on the study. First, the Theory of Planned Behavior (TPB) is a relatively new model, developed by Icek Ajzen in 1991, that has yet to be fully tested. This research provided data that furthers the knowledge concerning the TPB, and supports the model.

Second, the added components on the TPB that make up the Organizational Theory of Planned Behavior (OTPB) have proven to be inadequate. However, the organizational commitment construct seems to predict the normative beliefs construct. Further refinement of the OTPB is needed to address the other constructs, and which of those constructs influence the TPB.

Third, a larger sample size is needed to provide a better representation of the Air Force, and lend greater credibility to the study. An increase in the sample size will provide the statistical power to account for the large number of variables in the study.

Future Research

Future research is needed to further understand the extent to which Air Force members support environmental issues and participate in environmentally responsible behaviors.

Questionnaire Development. There is a need for future research that expands upon this survey instrument. One possible avenue for expansion is to address only one of the environmental behaviors (such as recycling), and write many questions under each

construct in the model so as to assure the reliability and measurement within the model itself. Then an in-depth analysis can be accomplished that focuses only on one behavior.

Addressing other environmental behaviors (such as composting or biking to work) may provide additional insight into human behavior, and could lead to a further strengthening of the TPB for other behaviors.

Assessing the added components that make up the OTPB is needed. This research effort found that only organizational commitment had any kind of effect on the TPB model. Additional components may need to be addressed, as well as deletion of the present components.

A further study of the TPB comparing Air Force members to the general public is needed. There might be significant differences in the results, although research to date does not support such differences (Holt, 1995). Programs that are specifically aimed at the Air Force may be suitable for the general public, while conversely, programs aimed at the general public may be suitable for the Air Force.

Demographic Predictors. A common theme in the literature is to analyze the relationship of demographic variables to environmental attitudes and behaviors (Scott and Willitis, 1994; Noe and Snow, 1990; Van Liere and Dunlap, 1981). Because the demographic variables of grade, time-in-service, age, gender, family income, level of education, and location of residence were collected, further research into demographic predictors is needed. A complete listing of the demographic items is shown in Appendix A, with the frequency counts of the responses shown in Appendix C.

Summary

The Theory of Planned Behavior (TPB), as developed by Icek Ajzen in 1991, attempts to predict the behavior and intention of individuals in regards to their attitude, subjective norm, perceived behavioral control, behavioral beliefs, and normative beliefs. Because this theory is relatively new, support from the academic community is needed for further validation. The research conducted in this report supports the TPB, and provides additional data that lends credibility to the theory. The influence of an organization on the TPB was also accomplished, but with mixed results. Of the four constructs added to the TPB model to form the Organizational Theory of Planned Behavior (OTPB), only organizational commitment had a significant variance and relationship to a component of the TPB (normative beliefs).

The demographic variables of gender, age, and education were examined in this report, and yielded interesting results. Women show a greater behavior and intention to carpool to work than men, having some college education influences energy conservation behavior and carpooling behavior at work, having some college education influences energy conservation intention at work, and those who are older show a greater behavior and intention to conserve energy at work.

In closing, this research supports the TPB, and provides insight into the organizations influence on the theory as well. Further examination of an organizations influence on the TPB is required in order to develop an acceptable OTPB model.

APPENDIX A

SURVEY PACKAGE

AIR FORCE INSTITUTE
OF TECHNOLOGY

ENVIRONMENTAL ATTITUDES & BEHAVIORS:
An Examination of the Antecedents of Behavior Among Air Force Members at Work

INSTRUCTIONS

All items are to be answered by filling in the appropriate spaces on the machine scored response sheet provided. For your responses to be included in this research study, return the response sheet along with any comments you may have. If there is an item on the questionnaire which you do not understand or do not wish to answer, please skip over it.

Please use a soft-lead (No. 2) pencil, and observe the following:

1. Make heavy black marks that fill in the space (of the response you select).

2. Erase cleanly any responses you wish to change.

3. Make no stray markings of any kind on the questionnaire.

4. Do not staple, fold, or tear response sheet.

5. Do NOT write your name anywhere on the response sheet so that your responses will be anonymous.

Each response block on the scan sheet has 10 spaces (numbered 1 through 10). The questionnaire items normally require a response from 1 - 5 only, therefore, you will rarely need to fill in a space numbered 6, 7, 8, 9, or 10. Respond to questionnaire items marking the appropriate response from those below the instructions given in each section. The following example is shown:

SCALE:

STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE
1	2	3	4	5

SAMPLE ITEM:

I like the idea of recycling at work.

SAMPLE RESPONSE:

If you are "Neutral" to this question, you would blacken in the block on the scan sheet as follows:

1	2	3	4	5
O	O	●	O	O

First, we would like to ask some questions about yourself. This **background information** will help us interpret the results.

1. What is your pay-grade?

    1 E1 - E3
    2 E4 - E6
    3 E7 - E9
    4 O1 - O3
    5 O4 - O6

2. Which organization are you assigned to?

    1 Air Combat Command (ACC)
    2 Air Education and Training Command (AETC)
    3 Air Force Material Command (AFMC)
    4 Air Force Space Command (AFSPAC)
    5 Air Force Special Operations Command (AFSOC)
    6 Air Mobility Command (AMC)
    7 Pacific Air Forces (PACAF)
    8 United States Air Forces in Europe (USAFE)
    9 Field Operating Agency / Direct Reporting Unit
    10 OTHER

3. How long have you been in the Air Force?

    1 1 - 5 Years
    2 6 - 10 Years
    3 11 - 15 Years
    4 16 - 20 Years
    5 21 - 25 Years
    6 Over 25

4. What is your age?

    1 18 - 25 Years
    2 26 - 35 Years
    3 36 - 45 Years
    4 46 - 55 Years
    5 Over 55

5. What is your gender?

    1 Male
    2 Female

6. What is your gross annual FAMILY income (all family members including yourself)?

    1 $0 - $14,999
    2 $15,000 - $29,999
    3 $30,000 - $44,999
    4 $45,000 - $59,999
    5 $60,000 - $74,999
    6 Over $75,000

7. Do you live on-base?

    1 Yes
    2 No

8. If you live on-base, what type of on-base housing do you occupy?

    1 Military Family Housing
    2 Unaccompanied Personnel Housing
    3 Temporary Lodging Facility
    4 Other
    5 Not Applicable

9. If you live off-base, do you own or rent your housing?

    1 Own
    2 Rent
    3 Other
    4 Not Applicable

10. If you live off-base, what type of housing do you occupy?

1 Single Family Detached
2 Townhouse / Condominium
3 Apartment
4 Mobile Home
5 Other
6 Not Applicable

11. What is the highest educational level, credential, or degree that you have completed?

1 High School Diploma or Equivalent
2 Some College
3 Completed Associate's Degree
4 Completed Bachelor's Degree
5 Some Graduate Work
6 Completed Graduate Degree

12. Have you ever attended an environmental training class sponsored by the Air Force?

1 Yes
2 No
3 Don't Know

Now, we would like to ask you specific questions regarding your behavior in relation to recycling, energy conservation, and carpooling efforts at work. Please read the questions and use the following scale to indicate how often that you make an effort to do each of the items.

NEVER	SELDOM	OCCASIONALLY	MOST OF THE TIME	ALWAYS
1	2	3	4	5

13. I recycle at work.

14. I conserve energy at work.

15. I carpool to work.

16. I intend to recycle at work.

17. I intend to conserve energy at work.

18. I intend to carpool to work.

Finally, we would like you to think within an organizational setting to answer the questions in regards to the behaviors of recycling, energy conservation, and carpooling. Note that some questions are repetitive. This was done on purpose. Please read the questions and use the following scale to indicate your level of agreement or disagreement.

STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE
1	2	3	4	5

19. I like the idea of recycling at work.

20. I have a positive attitude toward recycling at work.

21. I like the idea of conserving energy at work.

22. I have a positive attitude toward conserving energy at work.

23. I like the idea of carpooling to work.

24. I have a positive attitude towards carpooling to work.

25. People who influence my decisions at work think I should recycle at work.

26. People who are important to me at work think I should recycle at work.

27. People who influence my decisions at work think I should conserve energy at work.

28. People who are important to me at work think I should conserve energy at work.

29. People who influence my decisions at work think I should carpool to work.

30. People who are important to me at work think I should carpool to work.

31. Whether or not I recycle at work is entirely up to me.

32. I have complete control over the amount of recycling that I do at work.

33. Whether or not I conserve energy at work is entirely up to me.

34. I have complete control over the energy conservation that I do at work.

35. Whether or not I carpool to work is entirely up to me.

36. I have complete control whether or not I carpool to work.

STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE
1	2	3	4	5

37. My recycling at work will help the environment.
38. Helping the environment by recycling at work is good.
39. My conserving energy at work will help the environment.
40. Helping the environment by conserving energy at work is good.
41. My carpooling to work will help the environment.
42. Helping the environment by carpooling to work is good.
43. My co-workers think I should recycle at work.
44. With respect to recycling at work, I want to do what my co-workers think I should do.
45. My co-workers think I should conserve energy at work.
46. With respect to conserving energy at work, I want to do what my co-workers think I should do.
47. My co-workers think I should carpool to work.
48. With respect to carpooling to work, I want to do what my co-workers think I should do.
49. Recycling at work is worthwhile only if I get paid to do so.
50. Conserving energy at work is worthwhile only if I get paid to do so.
51. Carpooling to work is worthwhile only if I get paid to do so.
52. My organization has programs that promote recycling.
53. My organization has programs that promote energy conservation.
54. My organization has programs that promote carpooling.
55. There is adequate information about recycling at my place of work.
56. There is adequate concern for recycling among my co-workers.

STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE
1	2	3	4	5

57. There is adequate concern for recycling among my supervisors.

58. There is adequate information about energy conservation at my place of work.

59. There is adequate concern for conserving energy among my co-workers.

60. There is adequate concern for conserving energy among my supervisors.

61. There is adequate information about carpooling at my place of work.

62. There is adequate concern for carpooling efforts among my co-workers.

63. There is adequate concern for carpooling efforts among my supervisors.

64. Having convenient access to a recycling container at work is an important part of my decision whether to engage in the behavior.

65. Having the time to recycle at work is an important part of my decision whether to engage in the behavior.

66. Having the convenient ability to conserve energy at work is an important part of my decision whether to engage in the behavior.

67. Having the time to conserve energy at work is an important part of my decision whether to engage in the behavior.

68. Having convenient access to a carpool group at work is an important part of my decision whether to engage in the behavior.

69. Having the time to carpool to work is an important part of my decision whether to engage in the behavior.

APPENDIX B

SECOND ITERATION (PILOT TEST) DATA

This appendix contains the frequency response tables for the demographic variables and the environmental behavioral items for the pilot test. The total cummulative frequency varies from item to item due to missing data. Respondents were instructed to skip over items which they did not understand or did not wish to answer.

Frequency Table for the Demographic Variables

	ITEM	PERCENT RESPONSE
1	What is your pay-grade?	
	E1 - E3	0.0
	E4 - E6	0.0
	E7 - E9	0.0
	O1 - O3	96.2
	O4 - O6	3.8
2	Which organization are you assigned to?	
	Air Combat Command (ACC)	26.1
	Air Education and Training Command (AETC)	43.5
	Air Force Material Command (AFMC)	13.0
	Air Force Space Command (AFSPAC)	8.7
	Air Force Special Operations Command (AFSOC)	0.0
	Air Mobility Command (AMC)	0.0
	Pacific Air Forces (PACAF)	8.7
	United States Air Forces in Europe (USAFE)	0.0
	Field Operating Agency/Direct Reporting Unit	0.0
	OTHER	0.0
3	How long have you been in the Air Force?	
	1 - 5 Years	65.4
	6 - 10 Years	26.9
	11 - 15 Years	7.7
	16 - 20 Years	0.0
	21 - 25 Years	0.0
	Over 25	0.0
4	What is your age?	
	18 - 25 Years	34.6
	26 - 35 Years	61.5
	36 - 45 Years	0.0
	46 - 55 Years	3.8
	Over 55	0.0
5	What is your gender	
	Male	92.3
	Female	7.7

6	What is your gross annual FAMILY income (all family members including yourself)?	
	$0 - $14,999	0.0
	$15,000 - $29,999	19.2
	$30,000 - $44,999	50.0
	$45,000 - $59,999	15.4
	$60,000 - $74,999	15.4
	Over $75,000	0.0
7	Do you live on-base?	
	Yes	34.6
	No	65.4
8	If you live on-base, what type of on-base housing do you occupy?	
	Military Family Housing	36.0
	Unaccompanied Personnel Housing	0.0
	Temporary Lodging Facility	0.0
	Other	0.0
	Not Applicable	64.0
9	If you live off-base, do you own or rent your housing?	
	Own	17.4
	Rent	56.5
	Other	0.0
	Not Applicable	26.1
10	If you live off-base, what type of housing do you occupy?	
	Single Family Detached	33.3
	Townhouse/Condominium	12.5
	Apartment	25.0
	Mobile Home	0.0
	Other	0.0
	Not Applicable	29.2
11	What is the highest educational level, credential, or degree that you have completed?	
	High School Diploma or Equivalent	0.0
	Some College	0.0
	Completed Associate's Degree	0.0
	Completed Bachelor's Degree	61.5
	Some Graduate Work	34.6
	Completed Graduate Degree	3.8
12	Have you ever attended an environmental training class sponsored by the Air Force?	
	Yes	50.0
	No	42.3
	Don't Know	7.7

Frequency Table for the Environmental Behavioral Items

		PERCENT RESPONSE				
	ITEM	Never	Seldom	Occasionally	Most of the time	Always
	BEHAVIOR					
13	I recycle at work.	0.0	0.0	15.4	53.8	30.8
14	I conserve energy at work.	0.0	3.8	26.9	57.7	11.5
15	I carpool to work.	73.1	23.1	3.8	0.0	0.0

		Never	Seldom	Occasionally	Most of the time	Always
	INTENTION					
16	I intend to recycle at work.	0.0	0.0	3.8	46.2	50.0
17	I intend to conserve energy at work.	0.0	0.0	23.1	42.3	34.6
18	I intend to carpool to work.	46.2	34.6	11.5	3.8	3.8
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	ATTITUDE					
19	I like the idea of recycling at work.	0.0	0.0	3.8	30.8	65.4
20	I have a positive attitude toward recycling at work.	0.0	3.8	15.4	30.8	50.0
21	I like the idea of conserving energy at work.	0.0	0.0	3.8	38.5	57.7
22	I have a positive attitude toward conserving energy at work.	0.0	0.0	7.7	30.8	61.5
23	I like the idea of carpooling to work.	7.7	38.5	34.6	11.5	7.7
24	I have a positive attitude towards carpooling to work.	15.4	30.8	34.6	11.5	7.7
	SUBJECTIVE NORM					
25	People who influence my decisions at work think I should recycle at work.	0.0	11.5	46.2	30.8	11.5
26	People who are important to me at work think I should recycle at work.	3.8	11.5	38.5	34.6	11.5
27	People who influence my decisions at work think I should conserve energy at work.	4.0	8.0	40.0	40.0	8.0
28	People who are important to me at work think I should conserve energy at work.	3.8	11.5	38.5	38.5	7.7
29	People who influence my decisions at work think I should carpool to work.	38.5	23.1	30.8	7.7	0.0
30	People who are important to me at work think I should carpool to work.	38.5	23.1	30.8	7.7	0.0
	BEHAVIORAL CONTROL					
31	Whether or not I recycle at work is entirely up to me.	3.8	3.8	19.2	34.6	38.5
32	I have complete control over the amount of recycling that I do at work.	7.7	3.8	19.2	34.6	34.6
33	Whether or not I conserve energy at work is entirely up to me.	3.8	19.2	19.2	30.8	26.9
34	I have complete control over the energy conservation that I do at work.	0.0	23.1	19.2	42.3	15.4
35	Whether or not I carpool to work is entirely up to me.	3.8	11.5	0.0	15.4	69.2
36	I have complete control over my use of carpools to work.	7.7	7.7	15.4	15.4	53.8
	BEHAVIORAL BELIEFS					
37	My recycling at work will help the environment.	3.8	0.0	19.2	23.1	53.8
38	Helping the environment by recycling at work is good.	0.0	0.0	15.4	15.4	69.2
39	My conserving energy at work will help the environment.	0.0	3.8	11.5	30.8	53.8
40	Helping the environment by conserving energy at work is good.	0.0	0.0	11.5	26.9	61.5
41	My carpooling to work will help the environment.	3.8	7.7	19.2	34.6	34.6
42	Helping the environment by carpooling to work is good.	3.8	7.7	19.2	30.8	38.5

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	NORMATIVE BELIEFS					
43	My co-workers think I should recycle at work.	3.8	7.7	38.5	38.5	11.5
44	With respect to recycling at work, I want to do what my co-workers think I should do.	15.4	15.4	50.0	15.4	3.8
45	My co-workers think I should conserve energy at work.	7.7	3.8	57.7	19.2	11.5
46	With respect to conserving energy at work, I want to do what my co-workers think I should do.	11.5	15.4	57.7	11.5	3.8
47	My co-workers think I should carpool to work.	19.2	42.3	38.5	0.0	0.0
48	With respect to carpooling to work, I want to do what my co-workers think I should do.	30.8	23.1	46.2	0.0	0.0
	ECONOMIC MOTIVATION					
49	Recycling at work is worthwhile only if I get paid to do so.	53.8	42.3	3.8	0.0	0.0
50	Conserving energy at work is worthwhile only if I get paid to do so.	53.8	42.3	3.8	0.0	0.0
51	Carpooling to work is worthwhile only if I get paid to do so.	38.5	34.6	7.7	15.4	3.8
	AWARENESS PROGRAMS					
52	My organization has programs that promote recycling.	0.0	7.7	7.7	46.2	38.5
53	My organization has programs that promote energy conservation.	0.0	7.7	23.1	46.2	23.1
54	My organization has programs that promote carpooling.	53.8	30.8	7.7	7.7	0.0
	ORGANIZATIONAL COMMITMENT					
55	There is adequate information about recycling at my place of work.	0.0	15.4	30.8	46.2	7.7
56	There is adequate concern for recycling among my co-workers.	0.0	19.2	30.8	46.2	3.8
57	There is adequate concern for recycling among my supervisors.	0.0	11.5	42.3	42.3	3.8
58	There is adequate information about energy conservation at my place of work.	0.0	23.1	53.8	15.4	7.7
59	There is adequate concern for energy conservation among my co-workers.	0.0	23.1	50.0	23.1	3.8
60	There is adequate concern for conserving energy among my supervisors.	0.0	19.2	53.8	15.4	11.5
61	There is adequate information about carpooling at my place of work.	42.3	30.8	19.2	7.7	0.0
62	There is adequate concern for carpooling efforts among my co-workers.	38.5	42.3	15.4	3.8	0.0
63	There is adequate concern for carpooling efforts among my supervisors.	34.6	46.2	15.4	3.8	0.0
	RESOURCE-FACILITATING CONDITIONS					
64	I have convenient access to a recycling container at work.	3.8	3.8	3.8	65.4	23.1
65	Having the time to recycle at work is an important part of my decision whether to engage in the behavior.	3.8	11.5	26.9	46.2	11.5
66	It is convenient for me to conserve energy at work.	3.8	7.7	42.3	42.3	3.8

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
67	Having the time to conserve energy at work is an important part of my decision whether to engage in the behavior.	3.8	19.2	38.5	30.8	7.7
68	I have convenient access to a carpool group at work.	46.2	26.9	11.5	7.7	7.7
69	Having the time to carpool to work is an important part of my decision whether to engage in the behavior.	24.0	12.0	12.0	24.0	28.0

APPENDIX C

THIRD ITERATION (MAIN STUDY) DATA

This appendix contains the frequency response tables for the demographic variables and the environmental behavioral items for the main study. The total cummulative frequency varies from item to item due to missing data. Respondents were instructed to skip over items which they did not understand or did not wish to answer.

Frequency Table for the Demographic Variables

	ITEM	PERCENT RESPONSE
1	What is your pay-grade?	
	E1 - E3	2.9
	E4 - E6	14.0
	E7 - E9	9.4
	O1 - O3	61.2
	O4 - O6	12.4
2	Which organization are you assigned to?	
	Air Combat Command (ACC)	5.8
	Air Education and Training Command (AETC)	21.9
	Air Force Material Command (AFMC)	63.7
	Air Force Space Command (AFSPAC)	1.7
	Air Force Special Operations Command (AFSOC)	0.3
	Air Mobility Command (AMC)	2.1
	Pacific Air Forces (PACAF)	2.7
	United States Air Forces in Europe (USAFE)	1.0
	Field Operating Agency/Direct Reporting Unit	0.7
	OTHER	0.0
3	How long have you been in the Air Force?	
	1 - 5 Years	34.0
	6 - 10 Years	25.2
	11 - 15 Years	20.9
	16 - 20 Years	13.4
	21 - 25 Years	4.9
	Over 25	1.6
4	What is your age?	
	18 - 25 Years	17.6
	26 - 35 Years	60.6
	36 - 45 Years	18.9
	46 - 55 Years	2.9
	Over 55	0.0
5	What is your gender	
	Male	85.0
	Female	15.0

6	What is your gross annual FAMILY income (all family members including yourself)?	
	$0 - $14,999	1.6
	$15,000 - $29,999	18.3
	$30,000 - $44,999	37.3
	$45,000 - $59,999	25.2
	$60,000 - $74,999	11.1
	Over $75,000	6.5
7	Do you live on-base?	
	Yes	34.2
	No	65.8
8	If you live on-base, what type of on-base housing do you occupy?	
	Military Family Housing	32.8
	Unaccompanied Personnel Housing	2.7
	Temporary Lodging Facility	0.0
	Other	0.3
	Not Applicable	64.2
9	If you live off-base, do you own or rent your housing?	
	Own	30.7
	Rent	36.0
	Other	0.3
	Not Applicable	33.0
10	If you live off-base, what type of housing do you occupy?	
	Single Family Detached	42.4
	Townhouse/Condominium	10.5
	Apartment	12.2
	Mobile Home	1.0
	Other	1.6
	Not Applicable	32.2
11	What is the highest educational level, credential, or degree that you have completed?	
	High School Diploma or Equivalent	4.2
	Some College	12.7
	Completed Associate's Degree	5.5
	Completed Bachelor's Degree	17.9
	Some Graduate Work	29.3
	Completed Graduate Degree	30.3
12	Have you ever attended an environmental training class sponsored by the Air Force?	
	Yes	33.9
	No	59.6
	Don't Know	6.5

Frequency Table for the Environmental Behavioral Items

		PERCENT RESPONSE				
	ITEM	Never	Seldom	Occasionally	Most of the time	Always
	BEHAVIOR					
13	I recycle at work.	3.3	6.8	18.2	51.5	20.2
14	I conserve energy at work.	1.3	8.5	26.1	51.8	12.4
15	I carpool to work.	71.0	16.9	7.2	3.6	1.3

		Never	Seldom	Occasionally	Most of the time	Always
	INTENTION					
16	I intend to recycle at work.	2.0	2.3	19.5	38.1	38.1
17	I intend to conserve energy at work.	1.0	4.6	23.8	43.3	27.3
18	I intend to carpool to work.	57.3	23.1	11.7	3.9	3.9
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	ATTITUDE					
19	I like the idea of recycling at work.	0.0	0.7	5.5	35.8	58.0
20	I have a positive attitude toward recycling at work.	0.3	0.7	7.8	38.8	52.4
21	I like the idea of conserving energy at work.	0.0	0.3	7.5	45.6	46.6
22	I have a positive attitude toward conserving energy at work.	0.3	0.3	12.1	45.6	41.7
23	I like the idea of carpooling to work.	18.6	26.7	26.7	16.0	12.1
24	I have a positive attitude towards carpooling to work.	18.6	22.5	27.0	19.5	12.4
	SUBJECTIVE NORM					
25	People who influence my decisions at work think I should recycle at work.	3.9	8.8	51.1	26.4	9.8
26	People who are important to me at work think I should recycle at work.	2.9	7.5	52.1	28.0	9.4
27	People who influence my decisions at work think I should conserve energy at work.	2.9	7.8	48.5	30.9	9.8
28	People who are important to me at work think I should conserve energy at work.	3.6	7.5	48.5	30.9	9.4
29	People who influence my decisions at work think I should carpool to work.	16.9	23.5	52.4	5.9	1.3
30	People who are important to me at work think I should carpool to work.	18.2	21.8	52.8	5.9	1.3
	BEHAVIORAL CONTROL					
31	Whether or not I recycle at work is entirely up to me.	4.9	10.7	6.8	44.0	33.6
32	I have complete control over the amount of recycling that I do at work.	3.6	13.4	8.8	40.7	33.6
33	Whether or not I conserve energy at work is entirely up to me.	3.9	16.6	11.7	44.0	23.8
34	I have complete control over the energy conservation that I do at work.	3.3	17.9	16.6	40.4	21.8
35	Whether or not I carpool to work is entirely up to me.	2.9	5.9	5.2	34.9	51.1
36	I have complete control over my use of carpools to work.	3.9	10.1	6.2	29.0	50.8
	BEHAVIORAL BELIEFS					
37	My recycling at work will help the environment.	0.7	2.6	6.2	46.6	44.0
38	Helping the environment by recycling at work is good.	0.3	1.6	4.9	37.8	55.4
39	My conserving energy at work will help the environment.	0.3	2.6	7.2	45.6	44.3
40	Helping the environment by conserving energy at work is good.	0.3	1.3	5.5	43.3	49.5
41	My carpooling to work will help the environment.	5.5	5.5	18.9	41.7	28.3
42	Helping the environment by carpooling to work is good.	2.3	5.9	20.2	38.4	33.2

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	NORMATIVE BELIEFS					
43	My co-workers think I should recycle at work.	3.3	7.8	50.5	30.0	8.5
44	With respect to recycling at work, I want to do what my co-workers think I should do.	13.7	19.2	45.6	17.9	3.6
45	My co-workers think I should conserve energy at work.	2.9	9.8	54.7	28.0	4.6
46	With respect to conserving energy at work, I want to do what my co-workers think I should do.	13.0	17.3	49.5	17.3	2.9
47	My co-workers think I should carpool to work.	13.4	29.6	52.1	3.6	1.3
48	With respect to carpooling to work, I want to do what my co-workers think I should do.	21.8	22.8	49.2	5.2	1.0
	ECONOMIC MOTIVATION					
49	Recycling at work is worthwhile only if I get paid to do so.	53.1	34.5	6.8	3.3	2.3
50	Conserving energy at work is worthwhile only if I get paid to do so.	53.4	35.5	6.8	2.3	2.0
51	Carpooling to work is worthwhile only if I get paid to do so.	41.4	33.9	14.3	6.2	4.2
	AWARENESS PROGRAMS					
52	My organization has programs that promote recycling.	3.6	10.1	10.7	58.3	17.3
53	My organization has programs that promote energy conservation.	2.9	15.6	22.5	49.2	9.8
54	My organization has programs that promote carpooling.	27.4	44.0	20.2	7.2	1.3
	ORGANIZATIONAL COMMITMENT					
55	There is adequate information about recycling at my place of work.	7.8	18.9	22.1	40.7	10.4
56	There is adequate concern for recycling among my co-workers.	5.5	17.3	32.2	38.8	6.2
57	There is adequate concern for recycling among my supervisors.	4.2	18.9	35.5	33.2	8.1
58	There is adequate information about energy conservation at my place of work.	5.5	24.8	30.6	33.9	5.2
59	There is adequate concern for energy conservation among my co-workers.	4.2	23.8	36.5	31.9	3.6
60	There is adequate concern for conserving energy among my supervisors.	4.9	21.8	36.5	32.2	4.6
61	There is adequate information about carpooling at my place of work.	23.8	36.5	29.3	9.1	1.3
62	There is adequate concern for carpooling efforts among my co-workers.	21.5	32.6	35.5	9.8	0.7
63	There is adequate concern for carpooling efforts among my supervisors.	20.5	30.0	39.4	8.5	1.6
	RESOURCE-FACILITATING CONDITIONS					
64	I have convenient access to a recycling container at work.	1.6	5.2	6.8	39.7	46.6
65	Having the time to recycle at work is an important part of my decision whether to engage in the behavior.	5.9	23.5	19.9	33.2	17.6
66	It is convenient for me to conserve energy at work.	2.9	9.8	18.9	44.3	24.1

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
67	Having the time to conserve energy aat work is an important part of my decision to engage in the behavior.	5.5	23.8	29.0	29.0	12.7
68	I have convenient access to a carpool group at work.	18.6	19.5	18.6	27.0	16.3
69	Having the time to carpool to work is an important part of my decision whether to engage in the behavior.	17.9	15.6	18.9	27.0	20.5

APPENDIX D

SURVEY DEVELOPMENT

This appendix contains information on how a survey is developed. The process of sending a questionnaire to prospective respondents, getting them to complete the questionnaire in an honest manner, and returning it can be viewed as a special case of "social exchange." The theory of social exchange asserts that the actions of individuals are motivated by the return these actions are expected to bring (Dillman, 1978: 12). Social exchange is different from the more familiar economic exchange in which money serves as a precise measure of worth of one's actions. Social exchange is a broader concept in which future obligations are created that are unspecified, the nature of the return cannot be bargained, and the range of goods, services, and experiences exchanged is quite diverse (Dillman, 1978: 12). It is assumed that people engage in activities because of the rewards they hope to reap, that all activities incur certain costs, and people attempt to keep costs below the rewards they expect to receive. As a result, whether a given behavior occurs is a function of the ratio between the perceived costs of doing that activity and the rewards one expects the other party to provide at a later time (Dillman, 1978: 12). Thus "there are three things that must be done to maximize survey response: minimize the costs of responding, maximize the rewards for doing so, and establish trust that those rewards will be delivered" (Dillman, 1978: 12).

The first step in writing a question is to identify exactly what kind of information is desired from survey respondents (Dillman, 1978: 80). Questions are usually classified as

requesting attitudes, what people say they want; beliefs, what people think is true; behaviors, what people do; and/or attributes, what people are (Dillman, 1978: 80). It is crucial to understand the differences among these types of information. Otherwise, efforts to write questions may inadvertently measure information that is not needed.

The second important step in writing questions is to determine question structure (Dillman, 1978: 86). Our basis for distinguishing among question structures is the nature of response behavior asked of the respondent. With this as our criterion, there are four basic types of question structures: open-ended, those questions that have no answer choice; closed-ended with ordered choices, questions with answer choices provided, each with a single dimension of some thought or behavior; close-ended with unordered response choices, questions with answer choices provided, but no single dimension underlies them; and partially close-ended, questions that provide answer choices, but the respondents have the option of creating their own responses (Dillman, 1978: 86 - 87). Virtually all questions that might be asked in a survey fit into one of these categories, with each question structure requiring respondents to engage in a different kind of response behavior having certain advantages and disadvantages (Dillman, 1978: 87).

The third decision researchers face in writing questions is how to word them (Dillman, 1978: 95). The wrong choice of words can create any number of problems - from excessive vagueness to too much precision, from being misunderstood to not being understood at all, from being too objectionable to being too uninteresting. "The rules, admonitions, and principles for how to word questions enumerated in various books and articles present a mind boggling array of generally good but often conflicting and

confusing directions about how to do it" (Dillman, 1978: 96). According to guidelines from Air University, questionnaires should: keep the language simple, keep the questions short, keep the number of questions short, limit each question to one idea or concept, not ask leading questions, use subjective terms such as good, fair, and bad sparingly, if at all, allow for all possible answers, avoid emotional or morally charged questions, obtain exact information with minimal confusion, include a few questions that can serve as checks on the accuracy and consistency of the answers as a whole, organize questions by placing demographic questions at the end, ask the most interesting and easiest questions first, group similar questions together, and be pretested (pilot tested) in order to uncover any weaknesses (Air University, 1993: 31 - 33). It must be noted that a list of admonitions, no matter how well intended, cannot be considered as absolute principles that must be adhered to without exception.

Three questions that researchers must ask about every survey question have been posed: Will it obtain the desired *kind* of information? Is the question *structured* in an appropriate way? Is the precise *wording* satisfactory? The writing is not complete if there is a negative answer to any of these questions. The question cannot produce the information the researcher wants unless all three are answered affirmatively (Dillman, 1978: 118).

It is a slow and painstaking process to arrange the questions in a questionnaire. The problem is that several goals must be met satisfactorily and simultaneously. First, the end result must be aesthetically pleasing to motivate the respondents to complete it. Second, the structure of precisely worded questions must be preserved. And third, the

pages must be constructed in a way that keeps respondents from skipping individual items or whole sections (Dillman, 1978: 133). Adhering strictly to a number of principles of page construction, all three goals can be accomplished. In formulating the pages to achieve all three goals, the questionnaire should: use lower case letters for questions and upper case letters for answers, identify answer categories on the left with numbers, establish a vertical flow for the response categories, provide directions for how to answer, have questions fit each page, and use transitions for continuity (Dillman, 1978: 133 - 150).

Other important considerations that must be considered when designing a questionnaire include the intensity scale, cover letter and instructions, and front and back covers. The intensity scale is a measure of the strength a respondent feels on a particular topic. Such a scale is used to obtain quantitative information about the survey subject. The most common and easily used intensity (or scaled) question involves the use of the Likert-type answer scale (Air University, 1993: 34). This scale allows the respondent to choose one of several (usually five) degrees of feeling about a statement, ranging from strong agreement to strong disagreement. The "questions" are in the form of statements, with the "answers" given scores (or weights) ranging from one to the number of available answers (Air University, 1993: 35).

The cover letter and instructions for a questionnaire aid the respondent in completing the questionnaire in a timely and correct manner. The cover letter provides background information on the purpose of the study, and why an individual should complete the survey. Confidentiality must be stressed, as well as the appreciation on part of the surveyor for the participation of the respondent. A point of contact should also be

listed on the cover letter to answer any questions or comments the respondents may have. While the cover letter presents the purpose and reason for a particular study, the instructions provide the means to completing the study. The instructions should give all the pertinent information that is needed to complete the survey in the correct manner. A sample item and response should also be given to illustrate the correct way in which to fill out the response sheet.

The questionnaire covers are likely to be examined before any other part of the questionnaire. Therefore, the front and back cover need to be designed to create a positive first impression. The front cover receives the greatest attention, and needs to contain the study title, a graphic illustration to attract the respondents, and the name and address of the study sponsor (Dillman, 1978: 150). The back cover is deceptively simple, and should consist of an invitation to make additional comments, a thank you, and plenty of white space (Dillman, 1978: 153). It must be noted that the back cover should not compete for attention with the front cover, or detract from it in any way.

APPENDIX E

STATISTICAL ANALYSIS SOFTWARE (SAS©) CODE

This appendix contains information on the Statistical Analysis Software (SAS©) code used in the evaluation of the data obtained. During the first iteration (Pre-Pilot Test), there was no need for statistical analysis; rather comments and general feedback were the primary concern. The second iteration (Pilot Test), however, required some initial statistical analysis. The code written in SAS© analyzed the reliability and descriptive statistics of the data. The third iteration (Main Study), used even more statistical tools, including descriptive statistics (N, Mean, Standard Deviation), realiability, factor analysis, regression, t-test, and analysis of variance (ANOVA) calculations.

Second Iteration (Pilot Test) SAS© Code

Descriptive Statistics

```
/* THESIS Statistical Analysis - DESCRIPTIVE STATISTICS
   "Environmental Attitudes and Behaviors:  An Examination
    of the Antecedents of Behavior Among Air Force Members at Work"
   Lt Mark S. Laudenslager
   GEE96D  Advisor:  Lt Col Steven Lofgren
*/

/* DEFINING Variables
        pay = Member Pay-Grade
        org = Assigned Organization
        time = Member Time in Service
        age = Age of Member
        sex = Gender of Member
        income = Total Family Income of Member
        base = Member Live On or Off Base
        onbase = Type of Onbase Housing Occupied
        offbase = Member Rent or Own Housing Offbase
        offtype = Type of Offbase Housing Occupied
        educ = Highest Education Level Reached by Member
        envtng = Member Environmental Training

        RecBeh1 = Recycling Behavior
        EnBeh1 = Energy Conservation Behavior
        CarBeh1 = Carpooling Behavior
```

```
        RecInt1 = Recycling Intention
        EnInt1 = Energy Conservation Intention
        CarInt1 = Carpooling Intention

        RecAtt(1-2) = Recycling Attitude
        EnAtt(1-2) = Energy Conservation Attitude
        CarAtt(1-2) = Carpooling Attitude

        RecSN(1-2) = Recycling Subjective Norm
        EnSN(1-2) = Energy Conservation Subjective Norm
        CarSN(1-2) = Carpooling Subjective Norm

        RecBC(1-2) = Recycling Perceived Behavioral Control
        EnBC(1-2) = Energy Conservation Perceived Behavioral Control
        CarBC(1-2) = Carpooling Perceived Behavioral Control

        RecBB(1-2) = Recycling Behavioral Belief
        EnBB(1-2) = Energy Conservation Behavioral Belief
        CarBB(1-2) = Carpooling Behavioral Belief

        RecNB(1-2) = Recycling Normative Belief
        EnNB(1-2) = Energy Conservation Normative Belief
        CarNB(1-2) = Carpooling Normative Belief

        RecEM1 = Recycling Economic Motivation
        EnEM1 = Energy Conservation Economic Motivation
        CarEM1 = Carpooling Economic Motivation

        RecAP1 = Recycling Awareness Program
        EnAP1 = Energy Conservation Awareness Program
        CarAP1 = Carpooling Awareness Program

        RecOC(1-3) = Recycling Organizational Commitment
        EnOC(1-3) = Energy Conservation Organizational Commitment
        CarOC(1-3) = Carpooling Organizational Commitment

        RecRFC(1-2) = Recycling Resource-Facilitating Condition
        EnRFC(1-2) = Energy Conservation Resource-Facilitating Condition
        CarRFC(1-2) = Carpooling Resource-Facilitating Condition
*/

data mark;
  infile 'pilot.dat' missover;

input
  pay 41 org 42 time 43 age 44 sex 45 income 46 base 47
  onbase 48 offbase 49 offtype 50 educ 51 envtng 52 RecBeh1 53
  EnBeh1 54 CarBeh1 55 RecInt1 56 EnInt1 57 CarInt1 58
  RecAtt1 59 RecAtt2 60 EnAtt1 61 EnAtt2 62 CarAtt1 63
  CarAtt2 64 RecSN1 65 RecSN2 66 EnSN1 67 EnSN2 68
  CarSN1 69 CarSN2 70 RecBC1 71 RecBC2 72 EnBC1 73
  EnBC2 74 CarBC1 75 CarBC2 76 RecBB1 77 RecBB2 78
  EnBB1 79 EnBB2 80 CarBB1 81 CarBB2 82 RecNB1 83
  RecNB2 84 EnNB1 85 EnNB2 86 CarNB1 87 CarNB2 88
  RecEM1 89 EnEM1 90 CarEM1 91 RecAP1 92 EnAP1 93
  CarAP1 94 RecOC1 95 RecOC2 96 RecOC3 97 EnOC1 98
  EnOC2 99 EnOC3 100 CarOC1 101 CarOC2 102 CarOC3 103
  RecRFC1 104 RecRFC2 105 EnRFC1 106 EnRFC2 107
  CarRFC1 108 CarRFC2 109;


/* Reformatting Data (SUMMATION) for Each Block in Model */

data sum;
  set mark;

/* SUMMATION */

RecAtt=RecAtt1+RecATT2;
EnAtt=EnAtt1+EnAtt2;
CarAtt=CarAtt1+CarAtt2;
```

```
RecSN=RecSn1+RecSN2;
EnSN=EnSN1+EnSN2;
CarSN=CarSN1+CarSN2;

RecBC=RecBC1+RecBC2;
EnBC=EnBC1+EnBC2;
CarBC=CarBC1+CarBC2;

RecBB=RecBB1+RecBB2;
EnBB=EnBB1+EnBB2;
CarBB=CarBB1+CarBB2;

RecNB=RecNB1+RecNB2;
EnNB=EnNB1+EnNB2;
CarNB=CarNB1+CarNB2;

RecOC=RecOC1+RecOC2+RecOC3;
EnOC=EnOC1+EnOC2+EnOC3;
CarOC=CarOC1+CarOC2+CarOC3;

RecRFC=RecRFC1+RecRFC2;
EnRFC=EnRFC1+EnRFC2;
CarRFC=CarRFC1+CarRFC2;


/* FREQUENCY TABLES */

proc freq;
  tables pay org time age sex income base onbase;
proc freq;
  tables offbase offtype educ envtng;

proc freq;
  tables RecBeh1 EnBeh1 CarBeh1 RecInt1 EnInt1 CarInt1;
proc freq;
  tables RecAtt1 RecAtt2 EnAtt1 EnAtt2 CarAtt1 CarAtt2;
proc freq;
  tables RecSN1 RecSN2 EnSN1 EnSN2 CarSN1 CarSN2;
proc freq;
  tables RecBC1 RecBC2 EnBC1 EnBC2 CarBC1 CarBC2;
proc freq;
  tables RecBB1 RecBB2 EnBB1 EnBB2 CarBB1 CarBB2;
proc freq;
  tables RecNB1 RecNB2 EnNB1 EnNB2 CarNB1 CarNB2;
proc freq;
  tables RecEM1 EnEM1 CarEM1 RecAP1 EnAP1 CarAP1;
proc freq;
  tables RecOC1 RecOC2 RecOC3 EnOC1 EnOC2 EnOC3 CarOC1 CarOC2 CarOC3;
proc freq;
  tables RecRFC1 RecRFC2 EnRFC1 EnRFC2 CarRFC1 CarRFC2;

run;
```

Reliability

```
/* THESIS Statistical Analysis - RELIABILITY
   "Environmental Attitudes and Behaviors:  An Examination
    of the Antecedents of Behavior Among Air Force Members
    at Work"
   Lt Mark S. Laudenslager
   GEE96D  Advisor:  Lt Col Steven Lofgren
*/

/* DEFINING Variables
        pay = Member Pay-Grade
        org = Assigned Organization
        time = Member Time in Service
        age = Age of Member
        sex = Gender of Member
```

```
        income = Total Family Income of Member
        base = Member Live On or Off Base
        onbase = Type of Onbase Housing Occupied
        offbase = Member Rent or Own Housing Offbase
        offtype = Type of Offbase Housing Occupied
        educ = Highest Education Level Reached by Member
        envtng = Member Environmental Training

        RecBeh1 = Recycling Behavior
        EnBeh1 = Energy Conservation Behavior
        CarBeh1 = Carpooling Behavior

        RecInt1 = Recycling Intention
        EnInt1 = Energy Conservation Intention
        CarInt1 = Carpooling Intention

        RecAtt(1-2) = Recycling Attitude
        EnAtt(1-2) = Energy Conservation Attitude
        CarAtt(1-2) = Carpooling Attitude

        RecSN(1-2) = Recycling Subjective Norm
        EnSN(1-2) = Energy Conservation Subjective Norm
        CarSN(1-2) = Carpooling Subjective Norm

        RecBC(1-2) = Recycling Perceived Behavioral Control
        EnBC(1-2) = Energy Conservation Perceived Behavioral Control
        CarBC(1-2) = Carpooling Perceived Behavioral Control

        RecBB(1-2) = Recycling Behavioral Belief
        EnBB(1-2) = Energy Conservation Behavioral Belief
        CarBB(1-2) = Carpooling Behavioral Belief

        RecNB(1-2) = Recycling Normative Belief
        EnNB(1-2) = Energy Conservation Normative Belief
        CarNB(1-2) = Carpooling Normative Belief

        RecEM1 = Recycling Economic Motivation
        EnEM1 = Energy Conservation Economic Motivation
        CarEM1 = Carpooling Economic Motivation

        RecAP1 = Recycling Awareness Program
        EnAP1 = Energy Conservation Awareness Program
        CarAP1 = Carpooling Awareness Program

        RecOC(1-3) = Recycling Organizational Commitment
        EnOC(1-3) = Energy Conservation Organizational Commitment
        CarOC(1-3) = Carpooling Organizational Commitment

        RecRFC(1-2) = Recycling Resource-Facilitating Condition
        EnRFC(1-2) = Energy Conservation Resource-Facilitating Condition
        CarRFC(1-2) = Carpooling Resource-Facilitating Condition
*/

data mark;
  infile 'pilot.dat' missover;

input
  pay 41 org 42 time 43 age 44 sex 45 income 46 base 47
  onbase 48 offbase 49 offtype 50 educ 51 envtng 52 RecBeh1 53
  EnBeh1 54 CarBeh1 55 RecInt1 56 EnInt1 57 CarInt1 58
  RecAtt1 59 RecAtt2 60 EnAtt1 61 EnAtt2 62 CarAtt1 63
  CarAtt2 64 RecSN1 65 RecSN2 66 EnSN1 67 EnSN2 68
  CarSN1 69 CarSN2 70 RecBC1 71 RecBC2 72 EnBC1 73
  EnBC2 74 CarBC1 75 CarBC2 76 RecBB1 77 RecBB2 78
  EnBB1 79 EnBB2 80 CarBB1 81 CarBB2 82 RecNB1 83
  RecNB2 84 EnNB1 85 EnNB2 86 CarNB1 87 CarNB2 88
  RecEM1 89 EnEM1 90 CarEM1 91 RecAP1 92 EnAP1 93
  CarAP1 94 RecOC1 95 RecOC2 96 RecOC3 97 EnOC1 98
  EnOC2 99 EnOC3 100 CarOC1 101 CarOC2 102 CarOC3 103
  RecRFC1 104 RecRFC2 105 EnRFC1 106 EnRFC2 107
  CarRFC1 108 CarRFC2 109;
```

```
/* Reformatting Data (SUMMATION) for Each Block in Model */

data sum;
  set mark;

/* SUMMATION */

RecAtt=RecAtt1+RecATT2;
EnAtt=EnAtt1+EnAtt2;
CarAtt=CarAtt1+CarAtt2;

RecSN=RecSn1+RecSN2;
EnSN=EnSN1+EnSN2;
CarSN=CarSN1+CarSN2;

RecBC=RecBC1+RecBC2;
EnBC=EnBC1+EnBC2;
CarBC=CarBC1+CarBC2;

RecBB=RecBB1+RecBB2;
EnBB=EnBB1+EnBB2;
CarBB=CarBB1+CarBB2;

RecNB=RecNB1+RecNB2;
EnNB=EnNB1+EnNB2;
CarNB=CarNB1+CarNB2;

RecOC=RecOC1+RecOC2+RecOC3;
EnOC=EnOC1+EnOC2+EnOC3;
CarOC=CarOC1+CarOC2+CarOC3;

RecRFC=RecRFC1+RecRFC2;
EnRFC=EnRFC1+EnRFC2;
CarRFC=CarRFC1+CarRFC2;


/* Generating a Matrix of Pearson Product Moment
    Correlations Among the Questionnaire Items */

/* CORRELATIONS (Reliability) Among Individual
    Questions (Components of the OTBP) */

proc corr data=mark alpha nomiss;
  var RecAtt1 RecAtt2;
proc corr data=mark alpha nomiss;
  var EnAtt1 EnAtt2;
proc corr data=mark alpha nomiss;
  var CarAtt1 CarAtt2;

proc corr data=mark alpha nomiss;
  var RecSN1 RecSN2;
proc corr data=mark alpha nomiss;
  var EnSN1 EnSN2;
proc corr data=mark alpha nomiss;
  var CarSN1 CarSN2;

proc corr data=mark alpha nomiss;
  var RecBC1 RecBC2;
proc corr data=mark alpha nomiss;
  var EnBC1 EnBC2;
proc corr data=mark alpha nomiss;
  var CarBC1 CarBC2;

proc corr data=mark alpha nomiss;
  var RecBB1 RecBB2;
proc corr data=mark alpha nomiss;
  var EnBB1 EnBB2;
proc corr data=mark alpha nomiss;
  var CarBB1 CarBB2;

proc corr data=mark alpha nomiss;
```

```
  var RecNB1 RecNB2;
proc corr data=mark alpha nomiss;
  var EnNB1 EnNB2;
proc corr data=mark alpha nomiss;
  var CarNB1 CarNB2;

proc corr data=mark alpha nomiss;
  var RecOC1 RecOC2 RecOC3;
proc corr data=mark alpha nomiss;
  var EnOC1 EnOC2 EnOC3;
proc corr data=mark alpha nomiss;
  var CarOC1 CarOC2 CarOC3;

proc corr data=mark alpha nomiss;
  var RecRFC1 RecRFC2;
proc corr data=mark alpha nomiss;
  var EnRFC1 EnRFC2;
proc corr data=mark alpha nomiss;
  var CarRFC1 CarRFC2;


/* CORRELATIONS (Reliability) Among Multi-Item
    Scale Variables (Summation Items) */

/* Recycling Components */

proc corr data=sum alpha nomiss;
  var RecAtt RecSn RecBB RecNB RecOC RecRFC;

/* Energy Conservation Components */

proc corr data=sum alpha nomiss;
  var EnAtt EnSN EnBC EnBB EnNB EnOC EnRFC;

/* Carpooling Components */

proc corr data=sum alpha nomiss;
  var CarAtt CarSN CarBC CarBB CarNB CarOC CarRFC;
run;
```

Third Iteration (Main Study) SAS© Code

Descriptive Statistics

```
/* THESIS Statistical Analysis - DESCRIPTIVE STATISTICS
   "Environmental Attitudes and Behaviors:  An Examination
    of the Antecedents of Behavior Among Air Force Members
    at Work"
   Lt Mark S. Laudenslager
   GEE96D  Advisor:  Lt Col Steven Lofgren
*/

/* DEFINING Variables
        pay = Member Pay-Grade
        org = Assigned Organization
        time = Member Time in Service
        age = Age of Member
        sex = Gender of Member
        income = Total Family Income of Member
        base = Member Live On or Off Base
        onbase = Type of Onbase Housing Occupied
        offbase = Member Rent or Own Housing Offbase
        offtype = Type of Offbase Housing Occupied
        educ = Highest Education Level Reached by Member
        envtng = Member Environmental Training

        RecBeh1 = Recycling Behavior
```

```
        EnBeh1 = Energy Conservation Behavior
        CarBeh1 = Carpooling Behavior

        RecInt1 = Recycling Intention
        EnInt1 = Energy Conservation Intention
        CarInt1 = Carpooling Intention

        RecAtt(1-2) = Recycling Attitude
        EnAtt(1-2) = Energy Conservation Attitude
        CarAtt(1-2) = Carpooling Attitude

        RecSN(1-2) = Recycling Subjective Norm
        EnSN(1-2) = Energy Conservation Subjective Norm
        CarSN(1-2) = Carpooling Subjective Norm

        RecBC(1-2) = Recycling Perceived Behavioral Control
        EnBC(1-2) = Energy Conservation Perceived Behavioral Control
        CarBC(1-2) = Carpooling Perceived Behavioral Control

        RecBB(1-2) = Recycling Behavioral Belief
        EnBB(1-2) = Energy Conservation Behavioral Belief
        CarBB(1-2) = Carpooling Behavioral Belief

        RecNB(1-2) = Recycling Normative Belief
        EnNB(1-2) = Energy Conservation Normative Belief
        CarNB(1-2) = Carpooling Normative Belief

        RecEM1 = Recycling Economic Motivation
        EnEM1 = Energy Conservation Economic Motivation
        CarEM1 = Carpooling Economic Motivation

        RecAP1 = Recycling Awareness Program
        EnAP1 = Energy Conservation Awareness Program
        CarAP1 = Carpooling Awareness Program

        RecOC(1-3) = Recycling Organizational Commitment
        EnOC(1-3) = Energy Conservation Organizational Commitment
        CarOC(1-3) = Carpooling Organizational Commitment

        RecRFC(1-2) = Recycling Resource-Facilitating Condition
        EnRFC(1-2) = Energy Conservation Resource-Facilitating Condition
        CarRFC(1-2) = Carpooling Resource-Facilitating Condition
*/

data mark;
  infile 'study.dat' missover;

input
  pay 41 org 42 time 43 age 44 sex 45 income 46 base 47
  onbase 48 offbase 49 offtype 50 educ 51 envtng 52 RecBeh1 53
  EnBeh1 54 CarBeh1 55 RecInt1 56 EnInt1 57 CarInt1 58
  RecAtt1 59 RecAtt2 60 EnAtt1 61 EnAtt2 62 CarAtt1 63
  CarAtt2 64 RecSN1 65 RecSN2 66 EnSN1 67 EnSN2 68
  CarSN1 69 CarSN2 70 RecBC1 71 RecBC2 72 EnBC1 73
  EnBC2 74 CarBC1 75 CarBC2 76 RecBB1 77 RecBB2 78
  EnBB1 79 EnBB2 80 CarBB1 81 CarBB2 82 RecNB1 83
  RecNB2 84 EnNB1 85 EnNB2 86 CarNB1 87 CarNB2 88
  RecEM1 89 EnEM1 90 CarEM1 91 RecAP1 92 EnAP1 93
  CarAP1 94 RecOC1 95 RecOC2 96 RecOC3 97 EnOC1 98
  EnOC2 99 EnOC3 100 CarOC1 101 CarOC2 102 CarOC3 103
  RecRFC1 104 RecRFC2 105 EnRFC1 106 EnRFC2 107
  CarRFC1 108 CarRFC2 109;


/* Reformatting Data (SUMMATION) for Each Block in Model */

data sum;
  set mark;

/* SUMMATION */

RecAtt=RecAtt1+RecATT2;
```

```
EnAtt=EnAtt1+EnAtt2;
CarAtt=CarAtt1+CarAtt2;

RecSN=RecSn1+RecSN2;
EnSN=EnSN1+EnSN2;
CarSN=CarSN1+CarSN2;

RecBC=RecBC1+RecBC2;
EnBC=EnBC1+EnBC2;
CarBC=CarBC1+CarBC2;

RecBB=RecBB1+RecBB2;
EnBB=EnBB1+EnBB2;
CarBB=CarBB1+CarBB2;

RecNB=RecNB1+RecNB2;
EnNB=EnNB1+EnNB2;
CarNB=CarNB1+CarNB2;

RecOC=RecOC1+RecOC2+RecOC3;
EnOC=EnOC1+EnOC2+EnOC3;
CarOC=CarOC1+CarOC2+CarOC3;

RecRFC=RecRFC1+RecRFC2;
EnRFC=EnRFC1+EnRFC2;
CarRFC=CarRFC1+CarRFC2;


/* FREQUENCY TABLES */

proc freq;
  tables pay org time age sex income base onbase;
proc freq;
  tables offbase offtype educ envtng;

proc freq;
  tables RecBeh1 EnBeh1 CarBeh1 RecInt1 EnInt1 CarInt1;
proc freq;
  tables RecAtt1 RecAtt2 EnAtt1 EnAtt2 CarAtt1 CarAtt2;
proc freq;
  tables RecSN1 RecSN2 EnSN1 EnSN2 CarSN1 CarSN2;
proc freq;
  tables RecBC1 RecBC2 EnBC1 EnBC2 CarBC1 CarBC2;
proc freq;
  tables RecBB1 RecBB2 EnBB1 EnBB2 CarBB1 CarBB2;
proc freq;
  tables RecNB1 RecNB2 EnNB1 EnNB2 CarNB1 CarNB2;
proc freq;
  tables RecEM1 EnEM1 CarEM1 RecAP1 EnAP1 CarAP1;
proc freq;
  tables RecOC1 RecOC2 RecOC3 EnOC1 EnOC2 EnOC3 CarOC1 CarOC2 CarOC3;
proc freq;
  tables RecRFC1 RecRFC2 EnRFC1 EnRFC2 CarRFC1 CarRFC2;

run;
```

Reliability

```
/* THESIS Statistical Analysis - RELIABILITY
   "Environmental Attitudes and Behaviors:  An Examination
    of the Antecedents of Behavior Among Air Force Members
    at Work"
   Lt Mark S. Laudenslager
   GEE96D  Advisor:  Lt Col Steven Lofgren
*/

/* DEFINING Variables
        pay = Member Pay-Grade
        org = Assigned Organization
```

```
        time = Member Time in Service
        age = Age of Member
        sex = Gender of Member
        income = Total Family Income of Member
        base = Member Live On or Off Base
        onbase = Type of Onbase Housing Occupied
        offbase = Member Rent or Own Housing Offbase
        offtype = Type of Offbase Housing Occupied
        educ = Highest Education Level Reached by Member
        envtng = Member Environmental Training

        RecBeh1 = Recycling Behavior
        EnBeh1 = Energy Conservation Behavior
        CarBeh1 = Carpooling Behavior

        RecInt1 = Recycling Intention
        EnInt1 = Energy Conservation Intention
        CarInt1 = Carpooling Intention

        RecAtt(1-2) = Recycling Attitude
        EnAtt(1-2) = Energy Conservation Attitude
        CarAtt(1-2) = Carpooling Attitude

        RecSN(1-2) = Recycling Subjective Norm
        EnSN(1-2) = Energy Conservation Subjective Norm
        CarSN(1-2) = Carpooling Subjective Norm

        RecBC(1-2) = Recycling Perceived Behavioral Control
        EnBC(1-2) = Energy Conservation Perceived Behavioral Control
        CarBC(1-2) = Carpooling Perceived Behavioral Control

        RecBB(1-2) = Recycling Behavioral Belief
        EnBB(1-2) = Energy Conservation Behavioral Belief
        CarBB(1-2) = Carpooling Behavioral Belief

        RecNB(1-2) = Recycling Normative Belief
        EnNB(1-2) = Energy Conservation Normative Belief
        CarNB(1-2) = Carpooling Normative Belief

        RecEM1 = Recycling Economic Motivation
        EnEM1 = Energy Conservation Economic Motivation
        CarEM1 = Carpooling Economic Motivation

        RecAP1 = Recycling Awareness Program
        EnAP1 = Energy Conservation Awareness Program
        CarAP1 = Carpooling Awareness Program

        RecOC(1-3) = Recycling Organizational Commitment
        EnOC(1-3) = Energy Conservation Organizational Commitment
        CarOC(1-3) = Carpooling Organizational Commitment

        RecRFC(1-2) = Recycling Resource-Facilitating Condition
        EnRFC(1-2) = Energy Conservation Resource-Facilitating Condition
        CarRFC(1-2) = Carpooling Resource-Facilitating Condition
*/

data mark;
  infile 'study.dat' missover;

input
  pay 41 org 42 time 43 age 44 sex 45 income 46 base 47
  onbase 48 offbase 49 offtype 50 educ 51 envtng 52 RecBeh1 53
  EnBeh1 54 CarBeh1 55 RecInt1 56 EnInt1 57 CarInt1 58
  RecAtt1 59 RecAtt2 60 EnAtt1 61 EnAtt2 62 CarAtt1 63
  CarAtt2 64 RecSN1 65 RecSN2 66 EnSN1 67 EnSN2 68
  CarSN1 69 CarSN2 70 RecBC1 71 RecBC2 72 EnBC1 73
  EnBC2 74 CarBC1 75 CarBC2 76 RecBB1 77 RecBB2 78
  EnBB1 79 EnBB2 80 CarBB1 81 CarBB2 82 RecNB1 83
  RecNB2 84 EnNB1 85 EnNB2 86 CarNB1 87 CarNB2 88
  RecEM1 89 EnEM1 90 CarEM1 91 RecAP1 92 EnAP1 93
  CarAP1 94 RecOC1 95 RecOC2 96 RecOC3 97 EnOC1 98
  EnOC2 99 EnOC3 100 CarOC1 101 CarOC2 102 CarOC3 103
```

```
  RecRFC1 104 RecRFC2 105 EnRFC1 106 EnRFC2 107
  CarRFC1 108 CarRFC2 109;

/* Reformatting Data (SUMMATION) for Each Block in Model */

data sum;
  set mark;

/* SUMMATION */

RecAtt=RecAtt1+RecATT2;
EnAtt=EnAtt1+EnAtt2;
CarAtt=CarAtt1+CarAtt2;

RecSN=RecSn1+RecSN2;
EnSN=EnSN1+EnSN2;
CarSN=CarSN1+CarSN2;

RecBC=RecBC1+RecBC2;
EnBC=EnBC1+EnBC2;
CarBC=CarBC1+CarBC2;

RecBB=RecBB1+RecBB2;
EnBB=EnBB1+EnBB2;
CarBB=CarBB1+CarBB2;

RecNB=RecNB1+RecNB2;
EnNB=EnNB1+EnNB2;
CarNB=CarNB1+CarNB2;

RecOC=RecOC1+RecOC2+RecOC3;
EnOC=EnOC1+EnOC2+EnOC3;
CarOC=CarOC1+CarOC2+CarOC3;

RecRFC=RecRFC1+RecRFC2;
EnRFC=EnRFC1+EnRFC2;
CarRFC=CarRFC1+CarRFC2;


/* Generating a Matrix of Pearson Product Moment
    Correlations Among the Questionnaire Items */

/* CORRELATIONS (Reliability) Among Individual
    Questions (Components of the OTBP) */

proc corr data=mark alpha nomiss;
  var RecAtt1 RecAtt2;
proc corr data=mark alpha nomiss;
  var EnAtt1 EnAtt2;
proc corr data=mark alpha nomiss;
  var CarAtt1 CarAtt2;

proc corr data=mark alpha nomiss;
  var RecSN1 RecSN2;
proc corr data=mark alpha nomiss;
  var EnSN1 EnSN2;
proc corr data=mark alpha nomiss;
  var CarSN1 CarSN2;

proc corr data=mark alpha nomiss;
  var RecBC1 RecBC2;
proc corr data=mark alpha nomiss;
  var EnBC1 EnBC2;
proc corr data=mark alpha nomiss;
  var CarBC1 CarBC2;

proc corr data=mark alpha nomiss;
  var RecBB1 RecBB2;
proc corr data=mark alpha nomiss;
  var EnBB1 EnBB2;
proc corr data=mark alpha nomiss;
```

```
  var CarBB1 CarBB2;

proc corr data=mark alpha nomiss;
  var RecNB1 RecNB2;
proc corr data=mark alpha nomiss;
  var EnNB1 EnNB2;
proc corr data=mark alpha nomiss;
  var CarNB1 CarNB2;

proc corr data=mark alpha nomiss;
  var RecOC1 RecOC2 RecOC3;
proc corr data=mark alpha nomiss;
  var EnOC1 EnOC2 EnOC3;
proc corr data=mark alpha nomiss;
  var CarOC1 CarOC2 CarOC3;

proc corr data=mark alpha nomiss;
  var RecRFC1 RecRFC2;
proc corr data=mark alpha nomiss;
  var EnRFC1 EnRFC2;
proc corr data=mark alpha nomiss;
  var CarRFC1 CarRFC2;


/* CORRELATIONS (Reliability) Among Multi-Item
    Scale Variables (Summation Items) */

/* Recycling Components */

proc corr data=sum alpha nomiss;
  var RecAtt RecSn RecBB RecNB RecOC RecRFC;

/* Energy Conservation Components */

proc corr data=sum alpha nomiss;
  var EnAtt EnSN EnBC EnBB EnNB EnOC EnRFC;

/* Carpooling Components */

proc corr data=sum alpha nomiss;
  var CarAtt CarSN CarBC CarBB CarNB CarOC CarRFC;

run;
```

Factor Analysis

```
/* THESIS Statistical Analysis - FACTOR ANALYSIS
   "Environmental Attitudes and Behaviors:  An Examination
    of the Antecedents of Behavior Among Air Force Members
    at Work"
   Lt Mark S. Laudenslager
   GEE96D  Advisor:  Lt Col Steven Lofgren
*/

/* DEFINING Variables
       pay = Member Pay-Grade
       org = Assigned Organization
       time = Member Time in Service
       age = Age of Member
       sex = Gender of Member
       income = Total Family Income of Member
       base = Member Live On or Off Base
       onbase = Type of Onbase Housing Occupied
       offbase = Member Rent or Own Housing Offbase
       offtype = Type of Offbase Housing Occupied
       educ = Highest Education Level Reached by Member
       envtng = Member Environmental Training

       RecBeh1 = Recycling Behavior
```

```
        EnBeh1 = Energy Conservation Behavior
        CarBeh1 = Carpooling Behavior

        RecInt1 = Recycling Intention
        EnInt1 = Energy Conservation Intention
        CarInt1 = Carpooling Intention

        RecAtt(1-2) = Recycling Attitude
        EnAtt(1-2) = Energy Conservation Attitude
        CarAtt(1-2) = Carpooling Attitude

        RecSN(1-2) = Recycling Subjective Norm
        EnSN(1-2) = Energy Conservation Subjective Norm
        CarSN(1-2) = Carpooling Subjective Norm

        RecBC(1-2) = Recycling Perceived Behavioral Control
        EnBC(1-2) = Energy Conservation Perceived Behavioral Control
        CarBC(1-2) = Carpooling Perceived Behavioral Control

        RecBB(1-2) = Recycling Behavioral Belief
        EnBB(1-2) = Energy Conservation Behavioral Belief
        CarBB(1-2) = Carpooling Behavioral Belief

        RecNB(1-2) = Recycling Normative Belief
        EnNB(1-2) = Energy Conservation Normative Belief
        CarNB(1-2) = Carpooling Normative Belief

        RecEM1 = Recycling Economic Motivation
        EnEM1 = Energy Conservation Economic Motivation
        CarEM1 = Carpooling Economic Motivation

        RecAP1 = Recycling Awareness Program
        EnAP1 = Energy Conservation Awareness Program
        CarAP1 = Carpooling Awareness Program

        RecOC(1-3) = Recycling Organizational Commitment
        EnOC(1-3) = Energy Conservation Organizational Commitment
        CarOC(1-3) = Carpooling Organizational Commitment

        RecRFC(1-2) = Recycling Resource-Facilitating Condition
        EnRFC(1-2) = Energy Conservation Resource-Facilitating Condition
        CarRFC(1-2) = Carpooling Resource-Facilitating Condition
*/

data mark;
  infile 'study.dat' missover;

input
  pay 41 org 42 time 43 age 44 sex 45 income 46 base 47
  onbase 48 offbase 49 offtype 50 educ 51 envtng 52 RecBeh1 53
  EnBeh1 54 CarBeh1 55 RecInt1 56 EnInt1 57 CarInt1 58
  RecAtt1 59 RecAtt2 60 EnAtt1 61 EnAtt2 62 CarAtt1 63
  CarAtt2 64 RecSN1 65 RecSN2 66 EnSN1 67 EnSN2 68
  CarSN1 69 CarSN2 70 RecBC1 71 RecBC2 72 EnBC1 73
  EnBC2 74 CarBC1 75 CarBC2 76 RecBB1 77 RecBB2 78
  EnBB1 79 EnBB2 80 CarBB1 81 CarBB2 82 RecNB1 83
  RecNB2 84 EnNB1 85 EnNB2 86 CarNB1 87 CarNB2 88
  RecEM1 89 EnEM1 90 CarEM1 91 RecAP1 92 EnAP1 93
  CarAP1 94 RecOC1 95 RecOC2 96 RecOC3 97 EnOC1 98
  EnOC2 99 EnOC3 100 CarOC1 101 CarOC2 102 CarOC3 103
  RecRFC1 104 RecRFC2 105 EnRFC1 106 EnRFC2 107
  CarRFC1 108 CarRFC2 109;


/* Reformatting Data (SUMMATION) for Each Block in Model */

data sum;
  set mark;

/* SUMMATION */

RecAtt=RecAtt1+RecATT2;
```

```
EnAtt=EnAtt1+EnAtt2;
CarAtt=CarAtt1+CarAtt2;

RecSN=RecSn1+RecSN2;
EnSN=EnSN1+EnSN2;
CarSN=CarSN1+CarSN2;

RecBC=RecBC1+RecBC2;
EnBC=EnBC1+EnBC2;
CarBC=CarBC1+CarBC2;

RecBB=RecBB1+RecBB2;
EnBB=EnBB1+EnBB2;
CarBB=CarBB1+CarBB2;

RecNB=RecNB1+RecNB2;
EnNB=EnNB1+EnNB2;
CarNB=CarNB1+CarNB2;

RecOC=RecOC1+RecOC2+RecOC3;
EnOC=EnOC1+EnOC2+EnOC3;
CarOC=CarOC1+CarOC2+CarOC3;

RecRFC=RecRFC1+RecRFC2;
EnRFC=EnRFC1+EnRFC2;
CarRFC=CarRFC1+CarRFC2;


/* FACTOR ANALYSIS */

proc factor rotate=varimax scree flag=.40 nfact=11;
  var RecBeh1 EnBeh1 CarBeh1 RecInt1 EnInt1 CarInt1
      RecAtt1 RecAtt2 EnAtt1 EnAtt2 CarAtt1 CarAtt2
      RecSN1 RecSN2 EnSN1 EnSN2 CarSN1 CarSN2
      RecBC1 RecBC2 EnBC1 EnBC2 CarBC1 CarBC2
      RecBB1 RecBB2 EnBB1 EnBB2 CarBB1 CarBB2
      RecNB1 RecNB2 EnNB1 EnNB2 CarNB1 CarNB2
      RecEM1 EnEM1 CarEM1 RecAP1 EnAP1 CarAP1
      RecOC1 RecOC2 RecOC3 EnOC1 EnOC2 EnOC3 CarOC1 CarOC2 CarOC3
      RecRFC1 RecRFC2 EnRFC1 EnRFC2 CarRFC1 CarRFC2;

run;
```

Regression (Hierarchical)

```
/* THESIS Statistical Analysis - REGRESSION
   "Environmental Attitudes and Behaviors:  An Examination
    of the Antecedents of Behavior Among Air Force Members
    at Work"
   Lt Mark S. Laudenslager
   GEE96D  Advisor:  Lt Col Steven Lofgren
*/

/* DEFINING Variables
        pay = Member Pay-Grade
        org = Assigned Organization
        time = Member Time in Service
        age = Age of Member
        sex = Gender of Member
        income = Total Family Income of Member
        base = Member Live On or Off Base
        onbase = Type of Onbase Housing Occupied
        offbase = Member Rent or Own Housing Offbase
        offtype = Type of Offbase Housing Occupied
        educ = Highest Education Level Reached by Member
        envtng = Member Environmental Training

        RecBeh1 = Recycling Behavior
        EnBeh1 = Energy Conservation Behavior
```

```
        CarBeh1 = Carpooling Behavior

        RecInt1 = Recycling Intention
        EnInt1 = Energy Conservation Intention
        CarInt1 = Carpooling Intention

        RecAtt(1-2) = Recycling Attitude
        EnAtt(1-2) = Energy Conservation Attitude
        CarAtt(1-2) = Carpooling Attitude

        RecSN(1-2) = Recycling Subjective Norm
        EnSN(1-2) = Energy Conservation Subjective Norm
        CarSN(1-2) = Carpooling Subjective Norm

        RecBC(1-2) = Recycling Perceived Behavioral Control
        EnBC(1-2) = Energy Conservation Perceived Behavioral Control
        CarBC(1-2) = Carpooling Perceived Behavioral Control

        RecBB(1-2) = Recycling Behavioral Belief
        EnBB(1-2) = Energy Conservation Behavioral Belief
        CarBB(1-2) = Carpooling Behavioral Belief

        RecNB(1-2) = Recycling Normative Belief
        EnNB(1-2) = Energy Conservation Normative Belief
        CarNB(1-2) = Carpooling Normative Belief

        RecEM1 = Recycling Economic Motivation
        EnEM1 = Energy Conservation Economic Motivation
        CarEM1 = Carpooling Economic Motivation

        RecAP1 = Recycling Awareness Program
        EnAP1 = Energy Conservation Awareness Program
        CarAP1 = Carpooling Awareness Program

        RecOC(1-3) = Recycling Organizational Commitment
        EnOC(1-3) = Energy Conservation Organizational Commitment
        CarOC(1-3) = Carpooling Organizational Commitment

        RecRFC(1-2) = Recycling Resource-Facilitating Condition
        EnRFC(1-2) = Energy Conservation Resource-Facilitating Condition
        CarRFC(1-2) = Carpooling Resource-Facilitating Condition
*/

data mark;
  infile 'study.dat' missover;

input
  pay 41 org 42 time 43 age 44 sex 45 income 46 base 47
  onbase 48 offbase 49 offtype 50 educ 51 envtng 52 RecBeh1 53
  EnBeh1 54 CarBeh1 55 RecInt1 56 EnInt1 57 CarInt1 58
  RecAtt1 59 RecAtt2 60 EnAtt1 61 EnAtt2 62 CarAtt1 63
  CarAtt2 64 RecSN1 65 RecSN2 66 EnSN1 67 EnSN2 68
  CarSN1 69 CarSN2 70 RecBC1 71 RecBC2 72 EnBC1 73
  EnBC2 74 CarBC1 75 CarBC2 76 RecBB1 77 RecBB2 78
  EnBB1 79 EnBB2 80 CarBB1 81 CarBB2 82 RecNB1 83
  RecNB2 84 EnNB1 85 EnNB2 86 CarNB1 87 CarNB2 88
  RecEM1 89 EnEM1 90 CarEM1 91 RecAP1 92 EnAP1 93
  CarAP1 94 RecOC1 95 RecOC2 96 RecOC3 97 EnOC1 98
  EnOC2 99 EnOC3 100 CarOC1 101 CarOC2 102 CarOC3 103
  RecRFC1 104 RecRFC2 105 EnRFC1 106 EnRFC2 107
  CarRFC1 108 CarRFC2 109;


/* Reformatting Data (SUMMATION) for Each Block in Model */

data sum;
  set mark;

/* SUMMATION */

RecAtt=RecAtt1+RecATT2;
EnAtt=EnAtt1+EnAtt2;
```

```
CarAtt=CarAtt1+CarAtt2;

RecSN=RecSn1+RecSN2;
EnSN=EnSN1+EnSN2;
CarSN=CarSN1+CarSN2;

RecBC=RecBC1+RecBC2;
EnBC=EnBC1+EnBC2;
CarBC=CarBC1+CarBC2;

RecBB=RecBB1+RecBB2;
EnBB=EnBB1+EnBB2;
CarBB=CarBB1+CarBB2;

RecNB=RecNB1+RecNB2;
EnNB=EnNB1+EnNB2;
CarNB=CarNB1+CarNB2;

RecOC=RecOC1+RecOC2+RecOC3;
EnOC=EnOC1+EnOC2+EnOC3;
CarOC=CarOC1+CarOC2+CarOC3;

RecRFC=RecRFC1+RecRFC2;
EnRFC=EnRFC1+EnRFC2;
CarRFC=CarRFC1+CarRFC2;


/* HIERARCHICAL REGRESSION (Theory Building) */

/* Predicting Behavior (dep variable) from the Predictor
   Variable (indep variable) - Intention */

proc reg;
  model RecBeh1=RecInt1 / selection=forward stb;
proc reg;
  model EnBeh1=EnInt1 / selection=forward stb;
proc reg;
  model CarBeh1=CarInt1 / selection=forward stb;


/* Predicting Intention (dep variable - criterion) from the
   Predictor Variables (indep variables) - Attitude,
   Subjective Norm, and Behavioral Control */

proc reg;
  model RecInt1=RecAtt RecSN RecBC / selection=forward stb;
proc reg;
  model EnInt1=EnAtt EnSn EnBC / selection=forward stb;
proc reg;
  model CarInt1=CarAtt CarSN CarBC / selection=forward stb;


/* Predicting Attitude (dep variable) from the Predictor
   Variables (indep variables) - Behavioral Beliefs and
   Economic Motivation */

proc reg;
  model RecAtt=RecBB RecEM1 / selection=forward stb;
proc reg;
  model EnAtt=EnBB EnEM1 / selection=forward stb;
proc reg;
  model CarAtt=CarBB CarEM1 / selection=forward stb;


/* Predicting Subjective Norm (dep variable) from the Predictor
   Variable (indep variable) - Normative Belief */

proc reg;
  model RecSN=RecNB / selection=forward stb;
proc reg;
  model EnSN=EnNB / selection=forward stb;
proc reg;
```

```
  model CarSN=CarNB / selection=forward stb;


/* Predicting Perceived Behavioral Control (dep variable)
   from the Predictor Variable (indep variable) -
   Resource Facilitating Conditions */

proc reg;
  model RecBC=RecRFC / selection=forward stb;
proc reg;
  model EnBC=EnRFC / selection=forward stb;
proc reg;
  model CarBC=CarRFC / selection=forward stb;


/* Predicting Behavioral Beliefs (dep variable) from the
   Predictor Variable (indep variable) - Awareness Programs */

proc reg;
  model RecBB=RecAP1 / selection=forward stb;
proc reg;
  model EnBB=EnAP1 / selection=forward stb;
proc reg;
  model CarBB=CarAP1 / selection=forward stb;


/* Predicting Normative Beliefs (dep variable) from the
   Predictor Variable (indep variable) - Organizational
   Commitment */

proc reg;
  model RecNB=RecOC / selection=forward stb;
proc reg;
  model EnNB=EnOC / selection=forward stb;
proc reg;
  model CarNB=CarOC / selection=forward stb;

run;
```

Regression (Step-Wise #1)

```
/* THESIS Statistical Analysis - REGRESSION
   "Environmental Attitudes and Behaviors:  An Examination
    of the Antecedents of Behavior Among Air Force Members
    at Work"
   Lt Mark S. Laudenslager
   GEE96D  Advisor:  Lt Col Steven Lofgren
*/

/* DEFINING Variables
        pay = Member Pay-Grade
        org = Assigned Organization
        time = Member Time in Service
        age = Age of Member
        sex = Gender of Member
        income = Total Family Income of Member
        base = Member Live On or Off Base
        onbase = Type of Onbase Housing Occupied
        offbase = Member Rent or Own Housing Offbase
        offtype = Type of Offbase Housing Occupied
        educ = Highest Education Level Reached by Member
        envtng = Member Environmental Training

        RecBeh1 = Recycling Behavior
        EnBeh1 = Energy Conservation Behavior
        CarBeh1 = Carpooling Behavior

        RecInt1 = Recycling Intention
        EnInt1 = Energy Conservation Intention
```

```
        CarInt1 = Carpooling Intention

        RecAtt(1-2) = Recycling Attitude
        EnAtt(1-2) = Energy Conservation Attitude
        CarAtt(1-2) = Carpooling Attitude

        RecSN(1-2) = Recycling Subjective Norm
        EnSN(1-2) = Energy Conservation Subjective Norm
        CarSN(1-2) = Carpooling Subjective Norm

        RecBC(1-2) = Recycling Perceived Behavioral Control
        EnBC(1-2) = Energy Conservation Perceived Behavioral Control
        CarBC(1-2) = Carpooling Perceived Behavioral Control

        RecBB(1-2) = Recycling Behavioral Belief
        EnBB(1-2) = Energy Conservation Behavioral Belief
        CarBB(1-2) = Carpooling Behavioral Belief

        RecNB(1-2) = Recycling Normative Belief
        EnNB(1-2) = Energy Conservation Normative Belief
        CarNB(1-2) = Carpooling Normative Belief

        RecEM1 = Recycling Economic Motivation
        EnEM1 = Energy Conservation Economic Motivation
        CarEM1 = Carpooling Economic Motivation

        RecAP1 = Recycling Awareness Program
        EnAP1 = Energy Conservation Awareness Program
        CarAP1 = Carpooling Awareness Program

        RecOC(1-3) = Recycling Organizational Commitment
        EnOC(1-3) = Energy Conservation Organizational Commitment
        CarOC(1-3) = Carpooling Organizational Commitment

        RecRFC(1-2) = Recycling Resource-Facilitating Condition
        EnRFC(1-2) = Energy Conservation Resource-Facilitating Condition
        CarRFC(1-2) = Carpooling Resource-Facilitating Condition
*/

data mark;
  infile 'study.dat' missover;

input
  pay 41 org 42 time 43 age 44 sex 45 income 46 base 47
  onbase 48 offbase 49 offtype 50 educ 51 envtng 52 RecBeh1 53
  EnBeh1 54 CarBeh1 55 RecInt1 56 EnInt1 57 CarInt1 58
  RecAtt1 59 RecAtt2 60 EnAtt1 61 EnAtt2 62 CarAtt1 63
  CarAtt2 64 RecSN1 65 RecSN2 66 EnSN1 67 EnSN2 68
  CarSN1 69 CarSN2 70 RecBC1 71 RecBC2 72 EnBC1 73
  EnBC2 74 CarBC1 75 CarBC2 76 RecBB1 77 RecBB2 78
  EnBB1 79 EnBB2 80 CarBB1 81 CarBB2 82 RecNB1 83
  RecNB2 84 EnNB1 85 EnNB2 86 CarNB1 87 CarNB2 88
  RecEM1 89 EnEM1 90 CarEM1 91 RecAP1 92 EnAP1 93
  CarAP1 94 RecOC1 95 RecOC2 96 RecOC3 97 EnOC1 98
  EnOC2 99 EnOC3 100 CarOC1 101 CarOC2 102 CarOC3 103
  RecRFC1 104 RecRFC2 105 EnRFC1 106 EnRFC2 107
  CarRFC1 108 CarRFC2 109;


/* Reformatting Data (SUMMATION) for Each Block in Model */

data sum;
  set mark;

/* SUMMATION */

RecAtt=RecAtt1+RecATT2;
EnAtt=EnAtt1+EnAtt2;
CarAtt=CarAtt1+CarAtt2;

RecSN=RecSn1+RecSN2;
EnSN=EnSN1+EnSN2;
```

```
CarSN=CarSN1+CarSN2;

RecBC=RecBC1+RecBC2;
EnBC=EnBC1+EnBC2;
CarBC=CarBC1+CarBC2;

RecBB=RecBB1+RecBB2;
EnBB=EnBB1+EnBB2;
CarBB=CarBB1+CarBB2;

RecNB=RecNB1+RecNB2;
EnNB=EnNB1+EnNB2;
CarNB=CarNB1+CarNB2;

RecOC=RecOC1+RecOC2+RecOC3;
EnOC=EnOC1+EnOC2+EnOC3;
CarOC=CarOC1+CarOC2+CarOC3;

RecRFC=RecRFC1+RecRFC2;
EnRFC=EnRFC1+EnRFC2;
CarRFC=CarRFC1+CarRFC2;


/* STEP-WISE REGRESSION (Theory Building) */

/* Predicting Behavior (dep variable) from the Predictor
   Variable (indep variable) - Intention */

proc reg;
  model RecBeh1=RecInt1 / stb;
proc reg;
  model EnBeh1=EnInt1 / stb;
proc reg;
  model CarBeh1=CarInt1 / stb;


/* Predicting Intention (dep variable - criterion) from the
   Predictor Variables (indep variables) - Attitude,
   Subjective Norm, and Behavioral Control */

proc reg;
  model RecInt1=RecAtt RecSN RecBC / stb;
proc reg;
  model EnInt1=EnAtt EnSn EnBC / stb;
proc reg;
  model CarInt1=CarAtt CarSN CarBC / stb;


/* Predicting Attitude (dep variable) from the Predictor
   Variables (indep variables) - Behavioral Beliefs and
   Economic Motivation */

proc reg;
  model RecAtt=RecBB RecEM1 / stb;
proc reg;
  model EnAtt=EnBB EnEM1 / stb;
proc reg;
  model CarAtt=CarBB CarEM1 / stb;


/* Predicting Subjective Norm (dep variable) from the Predictor
   Variable (indep variable) - Normative Belief */

proc reg;
  model RecSN=RecNB / stb;
proc reg;
  model EnSN=EnNB / stb;
proc reg;
  model CarSN=CarNB / stb;


/* Predicting Perceived Behavioral Control (dep variable)
```

```
   from the Predictor Variable (indep variable) -
   Resource Facilitating Conditions */

proc reg;
  model RecBC=RecRFC / stb;
proc reg;
  model EnBC=EnRFC / stb;
proc reg;
  model CarBC=CarRFC / stb;


/* Predicting Behavioral Beliefs (dep variable) from the
   Predictor Variable (indep variable) - Awareness Programs */

proc reg;
  model RecBB=RecAP1 / stb;
proc reg;
  model EnBB=EnAP1 / stb;
proc reg;
  model CarBB=CarAP1 / stb;


/* Predicting Normative Beliefs (dep variable) from the
   Predictor Variable (indep variable) - Organizational
   Commitment */

proc reg;
  model RecNB=RecOC / stb;
proc reg;
  model EnNB=EnOC / stb;
proc reg;
  model CarNB=CarOC / stb;

run;
```

Regression (Step-Wise #2)

```
/* THESIS Statistical Analysis - REGRESSION
   "Environmental Attitudes and Behaviors:  An Examination
    of the Antecedents of Behavior Among Air Force Members
    at Work"
   Lt Mark S. Laudenslager
   GEE96D  Advisor:  Lt Col Steven Lofgren
*/

/* DEFINING Variables
        pay = Member Pay-Grade
        org = Assigned Organization
        time = Member Time in Service
        age = Age of Member
        sex = Gender of Member
        income = Total Family Income of Member
        base = Member Live On or Off Base
        onbase = Type of Onbase Housing Occupied
        offbase = Member Rent or Own Housing Offbase
        offtype = Type of Offbase Housing Occupied
        educ = Highest Education Level Reached by Member
        envtng = Member Environmental Training

        RecBeh1 = Recycling Behavior
        EnBeh1 = Energy Conservation Behavior
        CarBeh1 = Carpooling Behavior

        RecInt1 = Recycling Intention
        EnInt1 = Energy Conservation Intention
        CarInt1 = Carpooling Intention

        RecAtt(1-2) = Recycling Attitude
        EnAtt(1-2) = Energy Conservation Attitude
```

```
        CarAtt(1-2) = Carpooling Attitude

        RecSN(1-2) = Recycling Subjective Norm
        EnSN(1-2) = Energy Conservation Subjective Norm
        CarSN(1-2) = Carpooling Subjective Norm

        RecBC(1-2) = Recycling Perceived Behavioral Control
        EnBC(1-2) = Energy Conservation Perceived Behavioral Control
        CarBC(1-2) = Carpooling Perceived Behavioral Control

        RecBB(1-2) = Recycling Behavioral Belief
        EnBB(1-2) = Energy Conservation Behavioral Belief
        CarBB(1-2) = Carpooling Behavioral Belief

        RecNB(1-2) = Recycling Normative Belief
        EnNB(1-2) = Energy Conservation Normative Belief
        CarNB(1-2) = Carpooling Normative Belief

        RecEM1 = Recycling Economic Motivation
        EnEM1 = Energy Conservation Economic Motivation
        CarEM1 = Carpooling Economic Motivation

        RecAP1 = Recycling Awareness Program
        EnAP1 = Energy Conservation Awareness Program
        CarAP1 = Carpooling Awareness Program

        RecOC(1-3) = Recycling Organizational Commitment
        EnOC(1-3) = Energy Conservation Organizational Commitment
        CarOC(1-3) = Carpooling Organizational Commitment

        RecRFC(1-2) = Recycling Resource-Facilitating Condition
        EnRFC(1-2) = Energy Conservation Resource-Facilitating Condition
        CarRFC(1-2) = Carpooling Resource-Facilitating Condition
*/

data mark;
  infile 'study.dat' missover;

input
  pay 41 org 42 time 43 age 44 sex 45 income 46 base 47
  onbase 48 offbase 49 offtype 50 educ 51 envtng 52 RecBeh1 53
  EnBeh1 54 CarBeh1 55 RecInt1 56 EnInt1 57 CarInt1 58
  RecAtt1 59 RecAtt2 60 EnAtt1 61 EnAtt2 62 CarAtt1 63
  CarAtt2 64 RecSN1 65 RecSN2 66 EnSN1 67 EnSN2 68
  CarSN1 69 CarSN2 70 RecBC1 71 RecBC2 72 EnBC1 73
  EnBC2 74 CarBC1 75 CarBC2 76 RecBB1 77 RecBB2 78
  EnBB1 79 EnBB2 80 CarBB1 81 CarBB2 82 RecNB1 83
  RecNB2 84 EnNB1 85 EnNB2 86 CarNB1 87 CarNB2 88
  RecEM1 89 EnEM1 90 CarEM1 91 RecAP1 92 EnAP1 93
  CarAP1 94 RecOC1 95 RecOC2 96 RecOC3 97 EnOC1 98
  EnOC2 99 EnOC3 100 CarOC1 101 CarOC2 102 CarOC3 103
  RecRFC1 104 RecRFC2 105 EnRFC1 106 EnRFC2 107
  CarRFC1 108 CarRFC2 109;


/* Reformatting Data (SUMMATION) for Each Block in Model */

data sum;
  set mark;

/* SUMMATION */

RecAtt=RecAtt1+RecATT2;
EnAtt=EnAtt1+EnAtt2;
CarAtt=CarAtt1+CarAtt2;

RecSN=RecSn1+RecSN2;
EnSN=EnSN1+EnSN2;
CarSN=CarSN1+CarSN2;

RecBC=RecBC1+RecBC2;
EnBC=EnBC1+EnBC2;
```

```
CarBC=CarBC1+CarBC2;

RecBB=RecBB1+RecBB2;
EnBB=EnBB1+EnBB2;
CarBB=CarBB1+CarBB2;

RecNB=RecNB1+RecNB2;
EnNB=EnNB1+EnNB2;
CarNB=CarNB1+CarNB2;

RecOC=RecOC1+RecOC2+RecOC3;
EnOC=EnOC1+EnOC2+EnOC3;
CarOC=CarOC1+CarOC2+CarOC3;

RecRFC=RecRFC1+RecRFC2;
EnRFC=EnRFC1+EnRFC2;
CarRFC=CarRFC1+CarRFC2;


/* STEP-WISE REGRESSION (Theory Building) */

/* Predicting Behavior (dep variable) from Predictor
   Variables (indep variable) - Intention, Attitude,
   Subjective Norm, Perceived Behavioral Control,
   Behavioral Beliefs, Normative Beliefs, Economic
   Motivation, Awareness Programs, Organizational
   Commitment, and Resource Facilitating Conditions */

proc reg;
  model RecBeh1=RecInt1 RecAtt RecSN RecBC RecBB
        RecNB RecEM1 RecAP1 RecOC RecRFC / stb;
proc reg;
  model EnBeh1=EnInt1 EnAtt EnSN EnBC EnBB
        EnNB EnEM1 EnAP1 EnOC EnRFC / stb;
proc reg;
  model CarBeh1=CarInt1 CarAtt CarSN CarBC CarBB
        CarNB CarEM1 CarAP1 CarOC CarRFC / stb;

/* Predicting Intention (dep variable - criterion) from the
   Predictor Variables (indep variables) - Attitude,
   Subjective Norm, Perceived Behavioral Control,
   Behavioral Beliefs, Normative Beliefs, Economic
   Motivation, Awareness Programs, Organizational
   Commitment, and Resource Facilitating Conditions */

proc reg;
  model RecInt1=RecAtt RecSN RecBC RecBB RecNB RecEM1
        RecAP1 RecOC RecRFC / stb;
proc reg;
  model EnInt1=EnAtt EnSn EnBC EnBB EnNB EnEM1
        EnAP1 EnOC EnRFC / stb;
proc reg;
  model CarInt1=CarAtt CarSN CarBC CarBB CarNB CarEM1
        CarAP1 CarOC CarRFC / stb;

run;
```

T-Test

```
/* THESIS Statistical Analysis - T TEST
   "Environmental Attitudes and Behaviors:  An Examination
    of the Antecedents of Behavior Among Air Force Members
    at Work"
   Lt Mark S. Laudenslager
   GEE96D  Advisor:  Lt Col Steven Lofgren
*/

/* DEFINING Variables
       pay = Member Pay-Grade
```

```
        org = Assigned Organization
        time = Member Time in Service
        age = Age of Member
        sex = Gender of Member
        income = Total Family Income of Member
        base = Member Live On or Off Base
        onbase = Type of Onbase Housing Occupied
        offbase = Member Rent or Own Housing Offbase
        offtype = Type of Offbase Housing Occupied
        educ = Highest Education Level Reached by Member
        envtng = Member Environmental Training

        RecBeh1 = Recycling Behavior
        EnBeh1 = Energy Conservation Behavior
        CarBeh1 = Carpooling Behavior

        RecInt1 = Recycling Intention
        EnInt1 = Energy Conservation Intention
        CarInt1 = Carpooling Intention

        RecAtt(1-2) = Recycling Attitude
        EnAtt(1-2) = Energy Conservation Attitude
        CarAtt(1-2) = Carpooling Attitude

        RecSN(1-2) = Recycling Subjective Norm
        EnSN(1-2) = Energy Conservation Subjective Norm
        CarSN(1-2) = Carpooling Subjective Norm

        RecBC(1-2) = Recycling Perceived Behavioral Control
        EnBC(1-2) = Energy Conservation Perceived Behavioral Control
        CarBC(1-2) = Carpooling Perceived Behavioral Control

        RecBB(1-2) = Recycling Behavioral Belief
        EnBB(1-2) = Energy Conservation Behavioral Belief
        CarBB(1-2) = Carpooling Behavioral Belief

        RecNB(1-2) = Recycling Normative Belief
        EnNB(1-2) = Energy Conservation Normative Belief
        CarNB(1-2) = Carpooling Normative Belief

        RecEM1 = Recycling Economic Motivation
        EnEM1 = Energy Conservation Economic Motivation
        CarEM1 = Carpooling Economic Motivation

        RecAP1 = Recycling Awareness Program
        EnAP1 = Energy Conservation Awareness Program
        CarAP1 = Carpooling Awareness Program

        RecOC(1-3) = Recycling Organizational Commitment
        EnOC(1-3) = Energy Conservation Organizational Commitment
        CarOC(1-3) = Carpooling Organizational Commitment

        RecRFC(1-2) = Recycling Resource-Facilitating Condition
        EnRFC(1-2) = Energy Conservation Resource-Facilitating Condition
        CarRFC(1-2) = Carpooling Resource-Facilitating Condition
*/

data mark;
  infile 'study.dat' missover;

input
  pay 41 org 42 time 43 age 44 sex 45 income 46 base 47
  onbase 48 offbase 49 offtype 50 educ 51 envtng 52 RecBeh1 53
  EnBeh1 54 CarBeh1 55 RecInt1 56 EnInt1 57 CarInt1 58
  RecAtt1 59 RecAtt2 60 EnAtt1 61 EnAtt2 62 CarAtt1 63
  CarAtt2 64 RecSN1 65 RecSN2 66 EnSN1 67 EnSN2 68
  CarSN1 69 CarSN2 70 RecBC1 71 RecBC2 72 EnBC1 73
  EnBC2 74 CarBC1 75 CarBC2 76 RecBB1 77 RecBB2 78
  EnBB1 79 EnBB2 80 CarBB1 81 CarBB2 82 RecNB1 83
  RecNB2 84 EnNB1 85 EnNB2 86 CarNB1 87 CarNB2 88
  RecEM1 89 EnEM1 90 CarEM1 91 RecAP1 92 EnAP1 93
  CarAP1 94 RecOC1 95 RecOC2 96 RecOC3 97 EnOC1 98
```

```
  EnOC2 99 EnOC3 100 CarOC1 101 CarOC2 102 CarOC3 103
  RecRFC1 104 RecRFC2 105 EnRFC1 106 EnRFC2 107
  CarRFC1 108 CarRFC2 109;


/* Reformatting Data (SUMMATION) for Each Block in Model */

data sum;
  set mark;

/* SUMMATION */

RecAtt=RecAtt1+RecATT2;
EnAtt=EnAtt1+EnAtt2;
CarAtt=CarAtt1+CarAtt2;

RecSN=RecSn1+RecSN2;
EnSN=EnSN1+EnSN2;
CarSN=CarSN1+CarSN2;

RecBC=RecBC1+RecBC2;
EnBC=EnBC1+EnBC2;
CarBC=CarBC1+CarBC2;

RecBB=RecBB1+RecBB2;
EnBB=EnBB1+EnBB2;
CarBB=CarBB1+CarBB2;

RecNB=RecNB1+RecNB2;
EnNB=EnNB1+EnNB2;
CarNB=CarNB1+CarNB2;

RecOC=RecOC1+RecOC2+RecOC3;
EnOC=EnOC1+EnOC2+EnOC3;
CarOC=CarOC1+CarOC2+CarOC3;

RecRFC=RecRFC1+RecRFC2;
EnRFC=EnRFC1+EnRFC2;
CarRFC=CarRFC1+CarRFC2;


/* T-TEST to Assess the Relationship Between Sex and Intention and Behavior */

proc ttest;
  class sex;
  var RecInt1 EnInt1 CarInt1 RecBeh1 EnBeh1 CarBeh1;

run;
```

Analysis of Variance (ANOVA)

```
/* THESIS Statistical Analysis - ANOVA
   "Environmental Attitudes and Behaviors:  An Examination
    of the Antecedents of Behavior Among Air Force Members
    at Work"
   Lt Mark S. Laudenslager
   GEE96D  Advisor:  Lt Col Steven Lofgren
*/

/* DEFINING Variables
        pay = Member Pay-Grade
        org = Assigned Organization
        time = Member Time in Service
        age = Age of Member
        sex = Gender of Member
        income = Total Family Income of Member
        base = Member Live On or Off Base
        onbase = Type of Onbase Housing Occupied
        offbase = Member Rent or Own Housing Offbase
```

```
        offtype = Type of Offbase Housing Occupied
        educ = Highest Education Level Reached by Member
        envtng = Member Environmental Training

        RecBeh1 = Recycling Behavior
        EnBeh1 = Energy Conservation Behavior
        CarBeh1 = Carpooling Behavior

        RecInt1 = Recycling Intention
        EnInt1 = Energy Conservation Intention
        CarInt1 = Carpooling Intention

        RecAtt(1-2) = Recycling Attitude
        EnAtt(1-2) = Energy Conservation Attitude
        CarAtt(1-2) = Carpooling Attitude

        RecSN(1-2) = Recycling Subjective Norm
        EnSN(1-2) = Energy Conservation Subjective Norm
        CarSN(1-2) = Carpooling Subjective Norm

        RecBC(1-2) = Recycling Perceived Behavioral Control
        EnBC(1-2) = Energy Conservation Perceived Behavioral Control
        CarBC(1-2) = Carpooling Perceived Behavioral Control

        RecBB(1-2) = Recycling Behavioral Belief
        EnBB(1-2) = Energy Conservation Behavioral Belief
        CarBB(1-2) = Carpooling Behavioral Belief

        RecNB(1-2) = Recycling Normative Belief
        EnNB(1-2) = Energy Conservation Normative Belief
        CarNB(1-2) = Carpooling Normative Belief

        RecEM1 = Recycling Economic Motivation
        EnEM1 = Energy Conservation Economic Motivation
        CarEM1 = Carpooling Economic Motivation

        RecAP1 = Recycling Awareness Program
        EnAP1 = Energy Conservation Awareness Program
        CarAP1 = Carpooling Awareness Program

        RecOC(1-3) = Recycling Organizational Commitment
        EnOC(1-3) = Energy Conservation Organizational Commitment
        CarOC(1-3) = Carpooling Organizational Commitment

        RecRFC(1-2) = Recycling Resource-Facilitating Condition
        EnRFC(1-2) = Energy Conservation Resource-Facilitating Condition
        CarRFC(1-2) = Carpooling Resource-Facilitating Condition
*/

data mark;
  infile 'study.dat' missover;

input
  pay 41 org 42 time 43 age 44 sex 45 income 46 base 47
  onbase 48 offbase 49 offtype 50 educ 51 envtng 52 RecBeh1 53
  EnBeh1 54 CarBeh1 55 RecInt1 56 EnInt1 57 CarInt1 58
  RecAtt1 59 RecAtt2 60 EnAtt1 61 EnAtt2 62 CarAtt1 63
  CarAtt2 64 RecSN1 65 RecSN2 66 EnSN1 67 EnSN2 68
  CarSN1 69 CarSN2 70 RecBC1 71 RecBC2 72 EnBC1 73
  EnBC2 74 CarBC1 75 CarBC2 76 RecBB1 77 RecBB2 78
  EnBB1 79 EnBB2 80 CarBB1 81 CarBB2 82 RecNB1 83
  RecNB2 84 EnNB1 85 EnNB2 86 CarNB1 87 CarNB2 88
  RecEM1 89 EnEM1 90 CarEM1 91 RecAP1 92 EnAP1 93
  CarAP1 94 RecOC1 95 RecOC2 96 RecOC3 97 EnOC1 98
  EnOC2 99 EnOC3 100 CarOC1 101 CarOC2 102 CarOC3 103
  RecRFC1 104 RecRFC2 105 EnRFC1 106 EnRFC2 107
  CarRFC1 108 CarRFC2 109;

/* An ANOVA Table and Tukey Multiple Comparison of
   the Means for EDUCATION and AGE (Independent Variable
   - Predictor) in Relation to the Environmental
   (Recycling, Energy Conservation, Carpooling) BEHAVIOR
```

```
   and INTENTION (Dependent Variable - Criterion) is
   accomplished.  A check of the overall F value...and
   the null that mu1=mu2=mu3=mu4 is done */

/*  BEHAVIOR INVESTIGATION (Education) */
/*  ANOVA for EDUCATION Relation to RECYCLING
     BEHAVIOR  */
proc glm;
 class educ;
 model RecBeh1=educ;
 means educ / alpha=.05 tukey lines;


/*  ANOVA for EDUCATION Relation to
     ENERGY CONSERVATION BEHAVIOR  */
proc glm;
 class educ;
 model EnBeh1=educ;
 means educ / alpha=.05 tukey lines;


/*  ANOVA for EDUCATION Relation to
    CARPOOLING BEHAVIOR */
proc glm;
 class educ;
 model CarBeh1=educ;
 means educ / alpha=.05 tukey lines;


/*  BEHAVIOR INVESTIGATION (Age) */
/*  ANOVA for AGE Relation to RECYCLING
     BEHAVIOR  */
proc glm;
 class age;
 model RecBeh1=age;
 means age / alpha=.05 tukey lines;


/*  ANOVA for AGE Relation to ENERGY
     CONSERVATION BEHAVIOR  */
proc glm;
 class age;
 model EnBeh1=age;
 means age / alpha=.05 tukey lines;


/*  ANOVA for AGE Relation to CARPOOLING
     BEHAVIOR  */
proc glm;
 class age;
 model CarBeh1=age;
 means age / alpha=.05 tukey lines;


/*  INTENTION INVESTIGATION (Education) */
/*  ANOVA for EDUCATION Relation to RECYCLING
     INTENTION  */
proc glm;
 class educ;
 model RecInt1=educ;
 means educ / alpha=.05 tukey lines;


/*  ANOVA for EDUCATION Relation to
     ENERGY CONSERVATION INTENTION  */
proc glm;
 class educ;
 model EnInt1=educ;
 means educ / alpha=.05 tukey lines;


/*  ANOVA for EDUCATION Relation to
```

```
    CARPOOLING INTENTION */
proc glm;
 class educ;
 model CarInt1=educ;
 means educ / alpha=.05 tukey lines;


/*  INTENTION INVESTIGATION (Age) */
/*  ANOVA for AGE Relation to RECYCLING
     INTENTION  */
proc glm;
 class age;
 model RecInt1=age;
 means age / alpha=.05 tukey lines;


/*  ANOVA for AGE Relation to ENERGY
     CONSERVATION INTENTION  */
proc glm;
 class age;
 model EnInt1=age;
 means age / alpha=.05 tukey lines;


/*  ANOVA for AGE Relation to CARPOOLING
     INTENTION  */
proc glm;
 class age;
 model CarInt1=age;
 means age / alpha=.05 tukey lines;

run;
```

APPENDIX F

STATISTICAL ANALYSIS SOFTWARE (SAS©) OUTPUT

This appendix contains information on the Statistical Analysis Software (SAS©) output obtained in the analysis of the data. During the first iteration (Pre-Pilot Test), there was no need for statistical analysis; rather comments and general feedback were the primary concern. The second iteration (Pilot Test), however, required some initial statistical analysis, resulting in output. The output analyzed the reliability and descriptive statistics of the data. The third iteration (Main Study), used even more statistical tools, producing output that included descriptive statistics (N, Mean, Standard Deviation), realiability, factor analysis, regression, t-test, and analysis of variance (ANOVA) calculations.

Second Iteration (Pilot Test) SAS© Output

Descriptive Statistics and Reliability

```
The SAS System                               1
                                   16:05 Wednesday, July 3, 1996
                        Correlation Analysis

              2 'VAR' Variables:  RECATT1  RECATT2

                         Simple Statistics

 Variable         N      Mean    Std Dev        Sum    Minimum    Maximum

 RECATT1         26    4.6154     0.5711   120.0000     3.0000     5.0000
 RECATT2         26    4.2692     0.8744   111.0000     2.0000     5.0000
                           The SAS System                               2
                                   16:05 Wednesday, July 3, 1996
                        Correlation Analysis
                     Cronbach Coefficient Alpha

            for RAW variables          :  0.721371
            for STANDARDIZED variables:  0.762488

             Raw Variables                         Std. Variables

Deleted     Correlation                      Correlation
Variable     with Total          Alpha        with Total          Alpha
---------------------------------------------------------------------------
RECATT1       0.616146             .            0.616146             .
RECATT2       0.616146             .            0.616146             .
                           The SAS System                               3
                                   16:05 Wednesday, July 3, 1996

                        Correlation Analysis

  Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 26
```

```
                                   RECATT1           RECATT2

                 RECATT1           1.00000           0.61615
                                    0.0               0.0008

                 RECATT2           0.61615           1.00000
                                    0.0008            0.0
                               The SAS System                               4
                                       16:05 Wednesday, July 3, 1996
                              Correlation Analysis
                     2 'VAR' Variables:  ENATT1   ENATT2

                              Simple Statistics

Variable         N      Mean    Std Dev        Sum    Minimum    Maximum

ENATT1          26    4.5385     0.5818   118.0000     3.0000     5.0000
ENATT2          26    4.5385     0.6469   118.0000     3.0000     5.0000

                               The SAS System                               5
                                       16:05 Wednesday, July 3, 1996
                              Correlation Analysis
                          Cronbach Coefficient Alpha

                  for RAW variables          :  0.944206
                  for STANDARDIZED variables:  0.947006

                   Raw Variables                         Std. Variables
Deleted     Correlation                      Correlation
Variable     with Total          Alpha        with Total          Alpha
---------------------------------------------------------------------------
ENATT1        0.899346             .            0.899346             .
ENATT2        0.899346             .            0.899346             .
```

```
                     The SAS System                        6
                               16:05 Wednesday, July 3, 1996

                   Correlation Analysis

 Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 26

                        ENATT1            ENATT2

          ENATT1       1.00000           0.89935
                       0.0                0.0001

          ENATT2       0.89935           1.00000
                       0.0001            0.0
                     The SAS System                        7
                               16:05 Wednesday, July 3, 1996

                   Correlation Analysis

          2 'VAR' Variables:  CARATT1   CARATT2


                    Simple Statistics

Variable         N      Mean   Std Dev       Sum   Minimum   Maximum

CARATT1         26    2.7308    1.0414   71.0000    1.0000    5.0000
CARATT2         26    2.6538    1.1293   69.0000    1.0000    5.0000
                     The SAS System                        8
                               16:05 Wednesday, July 3, 1996

                   Correlation Analysis

                Cronbach Coefficient Alpha

           for RAW variables         :  0.844880
           for STANDARDIZED variables:  0.846479


             Raw Variables                Std. Variables

Deleted      Correlation                  Correlation
Variable      with Total         Alpha     with Total          Alpha
----------------------------------------------------------------------
CARATT1       0.733823             .        0.733823            .
CARATT2       0.733823             .        0.733823            .
                     The SAS System                        9
                               16:05 Wednesday, July 3, 1996

                   Correlation Analysis

 Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 26

                       CARATT1           CARATT2

         CARATT1       1.00000           0.73382
                       0.0                0.0001

         CARATT2       0.73382           1.00000
                       0.0001            0.0
                     The SAS System                       10
                               16:05 Wednesday, July 3, 1996

                   Correlation Analysis

          2 'VAR' Variables:  RECSN1   RECSN2


                    Simple Statistics

Variable         N      Mean   Std Dev       Sum   Minimum   Maximum

RECSN1          26    3.4231    0.8566   89.0000    2.0000    5.0000
RECSN2          26    3.3846    0.9829   88.0000    1.0000    5.0000
                     The SAS System                       11
                               16:05 Wednesday, July 3, 1996

                   Correlation Analysis

                Cronbach Coefficient Alpha

           for RAW variables         :  0.938011
           for STANDARDIZED variables:  0.942706


             Raw Variables                Std. Variables

Deleted      Correlation                  Correlation
Variable      with Total         Alpha     with Total          Alpha
----------------------------------------------------------------------
RECSN1        0.891622             .        0.891622            .
RECSN2        0.891622             .        0.891622            .
                     The SAS System                       12
                               16:05 Wednesday, July 3, 1996

                   Correlation Analysis

 Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 26

                        RECSN1            RECSN2

          RECSN1       1.00000           0.89162
                       0.0                0.0001

          RECSN2       0.89162           1.00000
                       0.0001            0.0
                     The SAS System                       13
                               16:05 Wednesday, July 3, 1996

                   Correlation Analysis

          2 'VAR' Variables:  ENSN1    ENSN2


                    Simple Statistics

Variable         N      Mean   Std Dev       Sum   Minimum   Maximum

ENSN1           25    3.4000    0.9129   85.0000    1.0000    5.0000
ENSN2           25    3.3200    0.9452   83.0000    1.0000    5.0000
                     The SAS System                       14
                               16:05 Wednesday, July 3, 1996

                   Correlation Analysis

                Cronbach Coefficient Alpha

           for RAW variables         :  0.977295
           for STANDARDIZED variables:  0.977597


             Raw Variables                Std. Variables

Deleted      Correlation                  Correlation
Variable      with Total         Alpha     with Total          Alpha
----------------------------------------------------------------------
ENSN1         0.956176             .        0.956176            .
ENSN2         0.956176             .        0.956176            .
                     The SAS System                       15
                               16:05 Wednesday, July 3, 1996

                   Correlation Analysis

 Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 25

                         ENSN1             ENSN2

           ENSN1       1.00000           0.95618
                       0.0                0.0001

           ENSN2       0.95618           1.00000
                       0.0001            0.0
                     The SAS System                       16
                               16:05 Wednesday, July 3, 1996

                   Correlation Analysis

          2 'VAR' Variables:  CARSN1   CARSN2


                    Simple Statistics

Variable         N      Mean   Std Dev       Sum   Minimum   Maximum

CARSN1          26    2.0769    1.0168   54.0000    1.0000    4.0000
CARSN2          26    2.0769    1.0168   54.0000    1.0000    4.0000
                     The SAS System                       17
                               16:05 Wednesday, July 3, 1996

                   Correlation Analysis

                Cronbach Coefficient Alpha

           for RAW variables         :  1.000000
           for STANDARDIZED variables:  1.000000


             Raw Variables                Std. Variables

Deleted      Correlation                  Correlation
```

Variable	with Total	Alpha	with Total	Alpha
CARSN1	1.000000	.	1.000000	.
CARSN2	1.000000	.	1.000000	.

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 26

	CARSN1	CARSN2
CARSN1	1.00000 0.0	1.00000 0.0001
CARSN2	1.00000 0.0001	1.00000 0.0

Correlation Analysis

2 'VAR' Variables: RECBC1 RECBC2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
RECBC1	26	4.0000	1.0583	104.0000	1.0000	5.0000
RECBC2	26	3.8462	1.1897	100.0000	1.0000	5.0000

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.612795
for STANDARDIZED variables: 0.615703

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
RECBC1	0.444776	.	0.444776	.
RECBC2	0.444776	.	0.444776	.

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 26

	RECBC1	RECBC2
RECBC1	1.00000 0.0	0.44478 0.0228
RECBC2	0.44478 0.0228	1.00000 0.0

Correlation Analysis

2 'VAR' Variables: ENBC1 ENBC2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ENBC1	26	3.5769	1.2058	93.0000	1.0000	5.0000
ENBC2	26	3.5000	1.0296	91.0000	2.0000	5.0000

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.741140
for STANDARDIZED variables: 0.746946

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
ENBC1	0.596101	.	0.596101	.
ENBC2	0.596101	.	0.596101	.

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 26

	ENBC1	ENBC2
ENBC1	1.00000 0.0	0.59610 0.0013
ENBC2	0.59610 0.0013	1.00000 0.0

Correlation Analysis

2 'VAR' Variables: CARBC1 CARBC2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
CARBC1	26	4.3462	1.1981	113.0000	1.0000	5.0000
CARBC2	26	4.0000	1.3266	104.0000	1.0000	5.0000

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.730828
for STANDARDIZED variables: 0.733235

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
CARBC1	0.578825	.	0.578825	.
CARBC2	0.578825	.	0.578825	.

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 26

	CARBC1	CARBC2
CARBC1	1.00000 0.0	0.57883 0.0019
CARBC2	0.57883 0.0019	1.00000 0.0

Correlation Analysis

2 'VAR' Variables: RECBB1 RECBB2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
RECBB1	26	4.2308	1.0318	110.0000	1.0000	5.0000
RECBB2	26	4.5385	0.7606	118.0000	3.0000	5.0000

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.766744
for STANDARDIZED variables: 0.788514

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
RECBB1	0.650865	.	0.650865	.
RECBB2	0.650865	.	0.650865	.

The SAS System 30
16:05 Wednesday, July 3, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 26

	RECBB1	RECBB2
RECBB1	1.00000 0.0	0.65087 0.0003
RECBB2	0.65087 0.0003	1.00000 0.0

The SAS System 31
16:05 Wednesday, July 3, 1996

Correlation Analysis

2 'VAR' Variables: ENBB1 ENBB2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ENBB1	26	4.3462	0.8458	113.0000	2.0000	5.0000
ENBB2	26	4.5000	0.7071	117.0000	3.0000	5.0000

The SAS System 32
16:05 Wednesday, July 3, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.861671
for STANDARDIZED variables: 0.869505

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
ENBB1	0.769136	.	0.769136	.
ENBB2	0.769136	.	0.769136	.

The SAS System 33
16:05 Wednesday, July 3, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 26

	ENBB1	ENBB2
ENBB1	1.00000 0.0	0.76914 0.0001
ENBB2	0.76914 0.0001	1.00000 0.0

The SAS System 34
16:05 Wednesday, July 3, 1996

Correlation Analysis

2 'VAR' Variables: CARBB1 CARBB2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
CARBB1	26	3.8846	1.1073	101.0000	1.0000	5.0000
CARBB2	26	3.9231	1.1286	102.0000	1.0000	5.0000

The SAS System 35
16:05 Wednesday, July 3, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.884312
for STANDARDIZED variables: 0.884401

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
CARBB1	0.792760	.	0.792760	.
CARBB2	0.792760	.	0.792760	.

The SAS System 36
16:05 Wednesday, July 3, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 26

	CARBB1	CARBB2
CARBB1	1.00000 0.0	0.79276 0.0001
CARBB2	0.79276 0.0001	1.00000 0.0

The SAS System 37
16:05 Wednesday, July 3, 1996

Correlation Analysis

2 'VAR' Variables: RECNB1 RECNB2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
RECNB1	26	3.4615	0.9479	90.0000	1.0000	5.0000
RECNB2	26	2.7692	1.0318	72.0000	1.0000	5.0000

The SAS System 38
16:05 Wednesday, July 3, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.751468
for STANDARDIZED variables: 0.753155

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
RECNB1	0.604048	.	0.604048	.
RECNB2	0.604048	.	0.604048	.

The SAS System 39
16:05 Wednesday, July 3, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 26

	RECNB1	RECNB2
RECNB1	1.00000 0.0	0.60405 0.0011
RECNB2	0.60405 0.0011	1.00000 0.0

The SAS System 40
16:05 Wednesday, July 3, 1996

Correlation Analysis

2 'VAR' Variables: ENNB1 ENNB2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ENNB1	26	3.2308	0.9923	84.0000	1.0000	5.0000
ENNB2	26	2.8077	0.9389	73.0000	1.0000	5.0000

The SAS System 41
16:05 Wednesday, July 3, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.721139
for STANDARDIZED variables: 0.721843

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
ENNB1	0.564753	.	0.564753	.
ENNB2	0.564753	.	0.564753	.

The SAS System 42
16:05 Wednesday, July 3, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 26

	ENNB1	ENNB2
ENNB1	1.00000 0.0	0.56475 0.0026
ENNB2	0.56475 0.0026	1.00000 0.0

The SAS System 43
16:05 Wednesday, July 3, 1996

Correlation Analysis

2 'VAR' Variables: CARNB1 CARNB2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
CARNB1	26	2.1923	0.7494	57.0000	1.0000	3.0000
CARNB2	26	2.1538	0.8806	56.0000	1.0000	3.0000

The SAS System 44
16:05 Wednesday, July 3, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.543168
for STANDARDIZED variables: 0.548311

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
CARNB1	0.377706	.	0.377706	.
CARNB2	0.377706	.	0.377706	.

The SAS System 45
16:05 Wednesday, July 3, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 26

	CARNB1	CARNB2
CARNB1	1.00000 0.0	0.37771 0.0571
CARNB2	0.37771 0.0571	1.00000 0.0

The SAS System 46
16:05 Wednesday, July 3, 1996

Correlation Analysis

3 'VAR' Variables: RECOC1 RECOC2 RECOC3

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
RECOC1	26	3.4615	0.8593	90.0000	2.0000	5.0000
RECOC2	26	3.3462	0.8458	87.0000	2.0000	5.0000
RECOC3	26	3.3846	0.7524	88.0000	2.0000	5.0000

The SAS System 47
16:05 Wednesday, July 3, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.553580
for STANDARDIZED variables: 0.564316

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
RECOC1	0.135106	0.793628	0.132879	0.796898
RECOC2	0.532058	0.156522	0.555807	0.157796
RECOC3	0.488796	0.270814	0.491817	0.270844

The SAS System 48
16:05 Wednesday, July 3, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 26

	RECOC1	RECOC2	RECOC3
RECOC1	1.00000 0.0	0.15663 0.4448	0.08566 0.6774
RECOC2	0.15663 0.4448	1.00000 0.0	0.66237 0.0002
RECOC3	0.08566 0.6774	0.66237 0.0002	1.00000 0.0

The SAS System 49
16:05 Wednesday, July 3, 1996

Correlation Analysis

3 'VAR' Variables: ENOC1 ENOC2 ENOC3

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ENOC1	26	3.0769	0.8449	80.0000	2.0000	5.0000
ENOC2	26	3.0769	0.7961	80.0000	2.0000	5.0000
ENOC3	26	3.1923	0.8953	83.0000	2.0000	5.0000

The SAS System 50
16:05 Wednesday, July 3, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.906878
for STANDARDIZED variables: 0.907505

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
ENOC1	0.776249	0.897815	0.774278	0.901215
ENOC2	0.811413	0.871060	0.809677	0.871885
ENOC3	0.862006	0.825737	0.862833	0.826593

The SAS System 51
16:05 Wednesday, July 3, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 26

	ENOC1	ENOC2	ENOC3
ENOC1	1.00000 0.0	0.70444 0.0001	0.77287 0.0001
ENOC2	0.70444 0.0001	1.00000 0.0	0.82019 0.0001
ENOC3	0.77287 0.0001	0.82019 0.0001	1.00000 0.0

The SAS System 52
16:05 Wednesday, July 3, 1996

Correlation Analysis

3 'VAR' Variables: CAROC1 CAROC2 CAROC3

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
CAROC1	26	1.9231	0.9767	50.0000	1.0000	4.0000
CAROC2	26	1.8462	0.8339	48.0000	1.0000	4.0000
CAROC3	26	1.8846	0.8162	49.0000	1.0000	4.0000

The SAS System 53
16:05 Wednesday, July 3, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.970195
for STANDARDIZED variables: 0.974508

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
CAROC1	0.911412	0.985673	0.911270	0.985789
CAROC2	0.968998	0.934750	0.971701	0.942731
CAROC3	0.948157	0.951076	0.951516	0.957280

The SAS System 54
16:05 Wednesday, July 3, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 26

	CAROC1	CAROC2	CAROC3
CAROC1	1.00000 0.0	0.91806 0.0001	0.89167 0.0001
CAROC2	0.91806 0.0001	1.00000 0.0	0.97198 0.0001
CAROC3	0.89167 0.0001	0.97198 0.0001	1.00000 0.0

The SAS System 55
16:05 Wednesday, July 3, 1996

Correlation Analysis

2 'VAR' Variables: RECRFC1 RECRFC2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
RECRFC1	26	4.0000	0.8944	104.0000	1.0000	5.0000
RECRFC2	26	3.5000	0.9899	91.0000	1.0000	5.0000

The SAS System 56
16:05 Wednesday, July 3, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : -.197531
for STANDARDIZED variables: -.198650

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
RECRFC1	-0.090351	.	-0.090351	.
RECRFC2	-0.090351	.	-0.090351	.

The SAS System 57
16:05 Wednesday, July 3, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 26

	RECRFC1	RECRFC2
RECRFC1	1.00000 0.0	-0.09035 0.6607
RECRFC2	-0.09035 0.6607	1.00000 0.0

The SAS System 58
16:05 Wednesday, July 3, 1996

Correlation Analysis

2 'VAR' Variables: ENRFC1 ENRFC2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ENRFC1	26	3.3462	0.8458	87.0000	1.0000	5.0000
ENRFC2	26	3.1923	0.9806	83.0000	1.0000	5.0000

The SAS System 59
16:05 Wednesday, July 3, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.842887
for STANDARDIZED variables: 0.848203

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
ENRFC1	0.736417	.	0.736417	.
ENRFC2	0.736417	.	0.736417	.

The SAS System 60
16:05 Wednesday, July 3, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 26

	ENRFC1	ENRFC2
ENRFC1	1.00000 0.0	0.73642 0.0001
ENRFC2	0.73642 0.0001	1.00000 0.0

The SAS System 61
16:05 Wednesday, July 3, 1996

Correlation Analysis

2 'VAR' Variables: CARRFC1 CARRFC2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
CARRFC1	25	1.9200	1.1518	48.0000	1.0000	5.0000
CARRFC2	25	3.2000	1.5811	80.0000	1.0000	5.0000

The SAS System 62
16:05 Wednesday, July 3, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.451787
for STANDARDIZED variables: 0.469285

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
CARRFC1	0.306579	.	0.306579	.
CARRFC2	0.306579	.	0.306579	.

The SAS System 63
16:05 Wednesday, July 3, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 25

	CARRFC1	CARRFC2
CARRFC1	1.00000 0.0	0.30658 0.1361

CARRFC2	0.30658 0.1361	1.00000 0.0

The SAS System 64
16:05 Wednesday, July 3, 1996

Correlation Analysis

6 'VAR' Variables: RECATT RECSN RECBB RECNB RECOC RECRFC

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
RECATT	26	8.8846	1.3062	231.0000	6.0000	10.0000
RECSN	26	6.8077	1.7893	177.0000	4.0000	10.0000
RECBB	26	8.7692	1.6324	228.0000	5.0000	10.0000
RECNB	26	6.2308	1.7733	162.0000	2.0000	10.0000
RECOC	26	10.1923	1.7893	265.0000	6.0000	13.0000
RECRFC	26	7.5000	1.2728	195.0000	4.0000	10.0000

The SAS System 65
16:05 Wednesday, July 3, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.539869
for STANDARDIZED variables: 0.535653

Deleted Variable	Raw Variables: Correlation with Total	Raw Variables: Alpha	Std. Variables: Correlation with Total	Std. Variables: Alpha
RECATT	0.368715	0.464787	0.337659	0.462385
RECSN	0.547413	0.341476	0.555133	0.346503
RECBB	0.188939	0.539402	0.202532	0.527173
RECNB	0.461228	0.395741	0.476615	0.390053

The SAS System 66
16:05 Wednesday, July 3, 1996

Correlation Analysis

Deleted Variable	Raw Variables: Correlation with Total	Raw Variables: Alpha	Std. Variables: Correlation with Total	Std. Variables: Alpha
RECOC	0.050203	0.611748	0.060686	0.589625
RECRFC	0.161621	0.542363	0.118985	0.564625

The SAS System 67
16:05 Wednesday, July 3, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 26

	RECATT	RECSN	RECBB	RECNB	RECOC	RECRFC
RECATT	1.00000 0.0	0.26396 0.1926	0.60609 0.0010	0.44368 0.0232	-0.10993 0.5929	-0.25263 0.2131
RECSN	0.26396 0.1926	1.00000 0.0	0.23071 0.2568	0.46838 0.0158	0.13695 0.5047	0.36006 0.0708
RECBB	0.60609 0.0010	0.23071 0.2568	1.00000 0.0	0.18495 0.3657	-0.17593 0.3900	-0.25028 0.2175
RECNB	0.44368 0.0232	0.46838 0.0158	0.18495 0.3657	1.00000 0.0	0.01067 0.9588	0.17722 0.3864

The SAS System 68
16:05 Wednesday, July 3, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 26

	RECATT	RECSN	RECBB	RECNB	RECOC	RECRFC
RECOC	-0.10993 0.5929	0.13695 0.5047	-0.17593 0.3900	0.01067 0.9588	1.00000 0.0	0.32493 0.1053
RECRFC	-0.25263 0.2131	0.36006 0.0708	-0.25028 0.2175	0.17722 0.3864	0.32493 0.1053	1.00000 0.0

The SAS System 69
16:05 Wednesday, July 3, 1996

Correlation Analysis

7 'VAR' Variables: ENATT ENSN ENBC ENBB ENNB ENOC ENRFC

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ENATT	25	9.0400	1.2069	226.0000	6.0000	10.0000
ENSN	25	6.7200	1.8376	168.0000	2.0000	10.0000
ENBC	25	7.2000	1.9365	180.0000	4.0000	10.0000
ENBB	25	8.8000	1.4720	220.0000	5.0000	10.0000
ENNB	25	6.0400	1.7436	151.0000	2.0000	10.0000
ENOC	25	9.4800	2.2752	237.0000	6.0000	15.0000
ENRFC	25	6.4400	1.6603	161.0000	2.0000	10.0000

The SAS System 70
16:05 Wednesday, July 3, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.490108
for STANDARDIZED variables: 0.520042

Deleted Variable	Raw Variables: Correlation with Total	Raw Variables: Alpha	Std. Variables: Correlation with Total	Std. Variables: Alpha
ENATT	0.321096	0.431434	0.355158	0.437814
ENSN	0.185267	0.474198	0.225326	0.493498
ENBC	0.113143	0.510045	0.120594	0.535533
ENBB	0.177240	0.474036	0.220918	0.495318

The SAS System 71
16:05 Wednesday, July 3, 1996

Correlation Analysis

Deleted Variable	Raw Variables: Correlation with Total	Raw Variables: Alpha	Std. Variables: Correlation with Total	Std. Variables: Alpha
ENNB	0.647686	0.245009	0.659789	0.290543
ENOC	0.162047	0.499777	0.141035	0.527525
ENRFC	0.164752	0.480354	0.120839	0.535438

The SAS System 72
16:05 Wednesday, July 3, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 25

	ENATT	ENSN	ENBC	ENBB	ENNB	ENOC	ENRFC
ENATT	1.00000 0.0	0.30586 0.1370	0.26385 0.2025	0.42686 0.0333	0.31601 0.1238	-0.12867 0.5399	-0.09232 0.6607
ENSN	0.30586 0.1370	1.00000 0.0	-0.13583 0.5174	0.31733 0.1222	0.49783 0.0113	0.03349 0.8737	-0.29936 0.1460
ENBC	0.26385 0.2025	-0.13583 0.5174	1.00000 0.0	-0.29235 0.1562	0.14562 0.4873	0.08133 0.6991	0.33435 0.1023
ENBB	0.42686 0.0333	0.31733 0.1222	-0.29235 0.1562	1.00000 0.0	0.32795 0.1095	0.04230 0.8409	-0.11593 0.5810

The SAS System 73
16:05 Wednesday, July 3, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 25

	ENATT	ENSN	ENBC	ENBB	ENNB	ENOC	ENRFC
ENNB	0.31601 0.1238	0.49783 0.0113	0.14562 0.4873	0.32795 0.1095	1.00000 0.0	0.21553 0.3008	0.35350 0.0830
ENOC	-0.12867 0.5399	0.03349 0.8737	0.08133 0.6991	0.04230 0.8409	0.21553 0.3008	1.00000 0.0	0.21751 0.2963
ENRFC	-0.09232 0.6607	-0.29936 0.1460	0.33435 0.1023	-0.11593 0.5810	0.35350 0.0830	0.21751 0.2963	1.00000 0.0

The SAS System 74
16:05 Wednesday, July 3, 1996

Correlation Analysis

7 'VAR' Variables: CARATT CARSN CARBC CARBB CARNB CAROC CARRFC

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
CARATT	25	5.3600	2.0591	134.0000	2.0000	10.0000
CARSN	25	4.1600	2.0753	104.0000	2.0000	8.0000
CARBC	25	8.2800	2.2642	207.0000	2.0000	10.0000
CARBB	25	7.8000	2.1602	195.0000	2.0000	10.0000
CARNB	25	4.3200	1.3760	108.0000	2.0000	6.0000
CAROC	25	5.7600	2.5541	144.0000	3.0000	12.0000
CARRFC	25	5.1200	2.2234	128.0000	2.0000	10.0000

The SAS System 75
16:05 Wednesday, July 3, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.313205
for STANDARDIZED variables: 0.361517

Deleted Variable	Raw Variables: Correlation with Total	Raw Variables: Alpha	Std. Variables: Correlation with Total	Std. Variables: Alpha
CARATT	0.103954	0.297370	0.142742	0.334574
CARSN	0.146577	0.271587	0.199153	0.301727
CARBC	-0.140382	0.446918	-0.160729	0.491902
CARBB	0.056948	0.327175	0.090242	0.364089

The SAS System 76
16:05 Wednesday, July 3, 1996

Correlation Analysis

Deleted Variable	Raw Variables: Correlation with Total	Raw Variables: Alpha	Std. Variables: Correlation with Total	Std. Variables: Alpha
CARNB	0.440037	0.158517	0.444301	0.144605
CAROC	0.303050	0.141416	0.321936	0.226030
CARRFC	0.166850	0.257311	0.131021	0.341250

The SAS System 77
16:05 Wednesday, July 3, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 25

	CARATT	CARSN	CARBC	CARBB	CARNB	CAROC	CARRFC
CARATT	1.00000	0.20047	-0.19232	0.34471	0.26647	-0.00666	-0.20095
	0.0	0.3366	0.3570	0.0915	0.1979	0.9748	0.3354
CARSN	0.20047	1.00000	-0.32916	-0.01115	0.44826	0.13332	0.12209
	0.3366	0.0	0.1081	0.9578	0.0246	0.5252	0.5610
CARBC	-0.19232	-0.32916	1.00000	0.03748	-0.15032	0.06254	0.05926
	0.3570	0.1081	0.0	0.8588	0.4732	0.7665	0.7784
CARBB	0.34471	-0.01115	0.03748	1.00000	0.16260	-0.15255	-0.11625
	0.0915	0.9578	0.8588	0.0	0.4374	0.4666	0.5800

The SAS System 78
16:05 Wednesday, July 3, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 25

	CARATT	CARSN	CARBC	CARBB	CARNB	CAROC	CARRFC
CARNB	0.26647	0.44826	-0.15032	0.16260	1.00000	0.37845	0.05502
	0.1979	0.0246	0.4732	0.4374	0.0	0.0621	0.7939
CAROC	-0.00666	0.13332	0.06254	-0.15255	0.37845	1.00000	0.46020
	0.9748	0.5252	0.7665	0.4666	0.0621	0.0	0.0206
CARRFC	-0.20095	0.12209	0.05926	-0.11625	0.05502	0.46020	1.00000
	0.3354	0.5610	0.7784	0.5800	0.7939	0.0206	0.0

Third Iteration (Main Study) SAS© Output

Descriptive Statistics and Reliability

The SAS System 531
13:12 Tuesday, August 13, 1996

Correlation Analysis

2 'VAR' Variables: RECATT1 RECATT2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
RECATT1	307	4.5114	0.6333	1385	2.0000	5.0000
RECATT2	307	4.4235	0.6930	1358	1.0000	5.0000

The SAS System 532
13:12 Tuesday, August 13, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.905367
for STANDARDIZED variables: 0.907378

Deleted Variable	Raw Variables: Correlation with Total	Raw Variables: Alpha	Std. Variables: Correlation with Total	Std. Variables: Alpha
RECATT1	0.830459	.	0.830459	.
RECATT2	0.830459	.	0.830459	.

The SAS System 533
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	RECATT1	RECATT2
RECATT1	1.00000	0.83046
	0.0	0.0001
RECATT2	0.83046	1.00000
	0.0001	0.0

The SAS System 534
13:12 Tuesday, August 13, 1996

Correlation Analysis

2 'VAR' Variables: ENATT1 ENATT2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum

ENATT1	307	4.3844	0.6382	1346	2.0000	5.0000
ENATT2	307	4.2801	0.7092	1314	1.0000	5.0000

The SAS System 535
13:12 Tuesday, August 13, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.882305
for STANDARDIZED variables: 0.885042

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
ENATT1	0.793789	.	0.793789	.
ENATT2	0.793789	.	0.793789	.

The SAS System 536
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	ENATT1	ENATT2
ENATT1	1.00000 0.0	0.79379 0.0001
ENATT2	0.79379 0.0001	1.00000 0.0

The SAS System 537
13:12 Tuesday, August 13, 1996

Correlation Analysis

2 'VAR' Variables: CARATT1 CARATT2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
CARATT1	307	2.7622	1.2650	848.0000	1.0000	5.0000
CARATT2	307	2.8469	1.2806	874.0000	1.0000	5.0000

The SAS System 538
13:12 Tuesday, August 13, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.902718
for STANDARDIZED variables: 0.902755

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
CARATT1	0.822747	.	0.822747	.
CARATT2	0.822747	.	0.822747	.

The SAS System 539
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	CARATT1	CARATT2
CARATT1	1.00000 0.0	0.82275 0.0001
CARATT2	0.82275 0.0001	1.00000 0.0

The SAS System 540
13:12 Tuesday, August 13, 1996

Correlation Analysis

2 'VAR' Variables: RECSN1 RECSN2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
RECSN1	307	3.2932	0.9032	1011	1.0000	5.0000
RECSN2	307	3.3355	0.8602	1024	1.0000	5.0000

The SAS System 541
13:12 Tuesday, August 13, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.939343
for STANDARDIZED variables: 0.939934

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
RECSN1	0.886675	.	0.886675	.
RECSN2	0.886675	.	0.886675	.

The SAS System 542
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	RECSN1	RECSN2
RECSN1	1.00000 0.0	0.88668 0.0001
RECSN2	0.88668 0.0001	1.00000 0.0

The SAS System 543
13:12 Tuesday, August 13, 1996

Correlation Analysis

2 'VAR' Variables: ENSN1 ENSN2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ENSN1	307	3.3681	0.8734	1034	1.0000	5.0000
ENSN2	307	3.3518	0.8856	1029	1.0000	5.0000

The SAS System 544
13:12 Tuesday, August 13, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.945519
for STANDARDIZED variables: 0.945568

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
ENSN1	0.896756	.	0.896756	.
ENSN2	0.896756	.	0.896756	.

The SAS System 545
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	ENSN1	ENSN2
ENSN1	1.00000 0.0	0.89676 0.0001
ENSN2	0.89676 0.0001	1.00000 0.0

The SAS System 546
13:12 Tuesday, August 13, 1996

Correlation Analysis

2 'VAR' Variables: CARSN1 CARSN2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
CARSN1	307	2.5114	0.8869	771.0000	1.0000	5.0000
CARSN2	307	2.5016	0.9016	768.0000	1.0000	5.0000

The SAS System 547
13:12 Tuesday, August 13, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.914662
for STANDARDIZED variables: 0.914729

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
CARSN1	0.842857	.	0.842857	.
CARSN2	0.842857	.	0.842857	.

The SAS System 548
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	CARSN1	CARSN2
CARSN1	1.00000 0.0	0.84286 0.0001
CARSN2	0.84286 0.0001	1.00000 0.0

The SAS System 549
13:12 Tuesday, August 13, 1996

Correlation Analysis

2 'VAR' Variables: RECBC1 RECBC2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
RECBC1	307	3.9055	1.1264	1199	1.0000	5.0000
RECBC2	307	3.8730	1.1261	1189	1.0000	5.0000

The SAS System 550
13:12 Tuesday, August 13, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.782206
for STANDARDIZED variables: 0.782206

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
RECBC1	0.642313	.	0.642313	.
RECBC2	0.642313	.	0.642313	.

The SAS System 551
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	RECBC1	RECBC2
RECBC1	1.00000 0.0	0.64231 0.0001
RECBC2	0.64231 0.0001	1.00000 0.0

The SAS System 552
13:12 Tuesday, August 13, 1996

Correlation Analysis

2 'VAR' Variables: ENBC1 ENBC2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ENBC1	307	3.6710	1.1257	1127	1.0000	5.0000
ENBC2	307	3.5961	1.1113	1104	1.0000	5.0000

The SAS System 553
13:12 Tuesday, August 13, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.801833
for STANDARDIZED variables: 0.801873

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
ENBC1	0.669272	.	0.669272	.
ENBC2	0.669272	.	0.669272	.

The SAS System 554
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	ENBC1	ENBC2
ENBC1	1.00000 0.0	0.66927 0.0001
ENBC2	0.66927 0.0001	1.00000 0.0

The SAS System 555
13:12 Tuesday, August 13, 1996

Correlation Analysis

2 'VAR' Variables: CARBC1 CARBC2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
CARBC1	307	4.2541	1.0003	1306	1.0000	5.0000
CARBC2	307	4.1270	1.1462	1267	1.0000	5.0000

The SAS System 556
13:12 Tuesday, August 13, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.872617
for STANDARDIZED variables: 0.877167

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
CARBC1	0.781209	.	0.781209	.
CARBC2	0.781209	.	0.781209	.

The SAS System 557
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	CARBC1	CARBC2
CARBC1	1.00000 0.0	0.78121 0.0001
CARBC2	0.78121 0.0001	1.00000 0.0

The SAS System 558
13:12 Tuesday, August 13, 1996

Correlation Analysis

2 'VAR' Variables: RECBB1 RECBB2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
RECBB1	307	4.3062	0.7567	1322	1.0000	5.0000
RECBB2	307	4.4625	0.6962	1370	1.0000	5.0000

The SAS System 559
13:12 Tuesday, August 13, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.881615
for STANDARDIZED variables: 0.883325

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
RECBB1	0.791032	.	0.791032	.
RECBB2	0.791032	.	0.791032	.

The SAS System 560
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	RECBB1	RECBB2
RECBB1	1.00000 0.0	0.79103 0.0001
RECBB2	0.79103 0.0001	1.00000 0.0

The SAS System 561
13:12 Tuesday, August 13, 1996

Correlation Analysis

2 'VAR' Variables: ENBB1 ENBB2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ENBB1	307	4.3094	0.7445	1323	1.0000	5.0000
ENBB2	307	4.4039	0.6858	1352	1.0000	5.0000

The SAS System 562
13:12 Tuesday, August 13, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.927732
for STANDARDIZED variables: 0.929407

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
ENBB1	0.868124	.	0.868124	.
ENBB2	0.868124	.	0.868124	.

The SAS System 563
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	ENBB1	ENBB2
ENBB1	1.00000 0.0	0.86812 0.0001
ENBB2	0.86812 0.0001	1.00000 0.0

The SAS System 564
13:12 Tuesday, August 13, 1996

Correlation Analysis

2 'VAR' Variables: CARBB1 CARBB2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
CARBB1	307	3.8176	1.0783	1172	1.0000	5.0000
CARBB2	307	3.9446	0.9869	1211	1.0000	5.0000

The SAS System 565
13:12 Tuesday, August 13, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.823643
for STANDARDIZED variables: 0.825539

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
CARBB1	0.702909	.	0.702909	.
CARBB2	0.702909	.	0.702909	.

The SAS System 566
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	CARBB1	CARBB2
CARBB1	1.00000 0.0	0.70291 0.0001
CARBB2	0.70291 0.0001	1.00000 0.0

The SAS System 567
13:12 Tuesday, August 13, 1996

Correlation Analysis

2 'VAR' Variables: RECNB1 RECNB2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
RECNB1	307	3.3257	0.8621	1021	1.0000	5.0000
RECNB2	307	2.7850	1.0095	855.0000	1.0000	5.0000

The SAS System 568
13:12 Tuesday, August 13, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.562482
for STANDARDIZED variables: 0.567508

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
RECNB1	0.396168	.	0.396168	.
RECNB2	0.396168	.	0.396168	.

The SAS System 569
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	RECNB1	RECNB2
RECNB1	1.00000 0.0	0.39617 0.0001
RECNB2	0.39617 0.0001	1.00000 0.0

The SAS System 570
13:12 Tuesday, August 13, 1996

Correlation Analysis

2 'VAR' Variables: ENNB1 ENNB2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ENNB1	307	3.2150	0.7958	987.0000	1.0000	5.0000
ENNB2	307	2.7980	0.9726	859.0000	1.0000	5.0000

The SAS System 571
13:12 Tuesday, August 13, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.638520
for STANDARDIZED variables: 0.647239

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
ENNB1	0.478457	.	0.478457	.
ENNB2	0.478457	.	0.478457	.

The SAS System 572
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	ENNB1	ENNB2
ENNB1	1.00000 0.0	0.47846 0.0001
ENNB2	0.47846 0.0001	1.00000 0.0

The SAS System 573
13:12 Tuesday, August 13, 1996

Correlation Analysis

2 'VAR' Variables: CARNB1 CARNB2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
CARNB1	307	2.4984	0.8180	767.0000	1.0000	5.0000
CARNB2	307	2.4072	0.9184	739.0000	1.0000	5.0000

The SAS System 574
13:12 Tuesday, August 13, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.639188
for STANDARDIZED variables: 0.642100

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
CARNB1	0.472863	.	0.472863	.
CARNB2	0.472863	.	0.472863	.

The SAS System 575
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	CARNB1	CARNB2
CARNB1	1.00000 0.0	0.47286 0.0001
CARNB2	0.47286 0.0001	1.00000 0.0

The SAS System 576
13:12 Tuesday, August 13, 1996

Correlation Analysis

3 'VAR' Variables: RECOC1 RECOC2 RECOC3

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
RECOC1	307	3.2704	1.1210	1004	1.0000	5.0000
RECOC2	307	3.2280	0.9902	991.0000	1.0000	5.0000
RECOC3	307	3.2215	0.9851	989.0000	1.0000	5.0000

The SAS System 577
13:12 Tuesday, August 13, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.837369
for STANDARDIZED variables: 0.841631

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
RECOC1	0.637024	0.845269	0.636969	0.845275
RECOC2	0.753299	0.724657	0.758073	0.728513
RECOC3	0.720837	0.756121	0.726657	0.759736

The SAS System 578
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	RECOC1	RECOC2	RECOC3
RECOC1	1.00000 0.0	0.61256 0.0001	0.57296 0.0001
RECOC2	0.61256 0.0001	1.00000 0.0	0.73201 0.0001
RECOC3	0.57296 0.0001	0.73201 0.0001	1.00000 0.0

The SAS System 579
13:12 Tuesday, August 13, 1996

Correlation Analysis

3 'VAR' Variables: ENOC1 ENOC2 ENOC3

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ENOC1	307	3.0847	1.0062	947.0000	1.0000	5.0000
ENOC2	307	3.0684	0.9316	942.0000	1.0000	5.0000
ENOC3	307	3.0977	0.9550	951.0000	1.0000	5.0000

The SAS System 580
13:12 Tuesday, August 13, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.922601
for STANDARDIZED variables: 0.923824

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
ENOC1	0.790855	0.932646	0.790799	0.932800
ENOC2	0.867267	0.869505	0.868877	0.870175
ENOC3	0.873967	0.862702	0.876186	0.864157

The SAS System 581
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	ENOC1	ENOC2	ENOC3
ENOC1	1.00000 0.0	0.76081 0.0001	0.77019 0.0001
ENOC2	0.76081 0.0001	1.00000 0.0	0.87406 0.0001
ENOC3	0.77019 0.0001	0.87406 0.0001	1.00000 0.0

The SAS System 582
13:12 Tuesday, August 13, 1996

Correlation Analysis

3 'VAR' Variables: CAROC1 CAROC2 CAROC3

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
CAROC1	307	2.2769	0.9692	699.0000	1.0000	5.0000
CAROC2	307	2.3550	0.9468	723.0000	1.0000	5.0000
CAROC3	307	2.4072	0.9602	739.0000	1.0000	5.0000

The SAS System 583
13:12 Tuesday, August 13, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.933272
for STANDARDIZED variables: 0.933557

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
CAROC1	0.810777	0.943846	0.811040	0.943895
CAROC2	0.918088	0.858979	0.918261	0.859001
CAROC3	0.860869	0.904307	0.861739	0.904444

The SAS System 584
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	CAROC1	CAROC2	CAROC3
CAROC1	1.00000 0.0	0.82556 0.0001	0.75285 0.0001
CAROC2	0.82556 0.0001	1.00000 0.0	0.89375 0.0001
CAROC3	0.75285 0.0001	0.89375 0.0001	1.00000 0.0

The SAS System 585
13:12 Tuesday, August 13, 1996

Correlation Analysis

2 'VAR' Variables: RECRFC1 RECRFC2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
RECRFC1	307	4.2443	0.9123	1303	1.0000	5.0000
RECRFC2	307	3.3322	1.1828	1023	1.0000	5.0000

The SAS System 586
13:12 Tuesday, August 13, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.484295
for STANDARDIZED variables: 0.496639

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
RECRFC1	0.330352	.	0.330352	.
RECRFC2	0.330352	.	0.330352	.

The SAS System 587
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	RECRFC1	RECRFC2
RECRFC1	1.00000 0.0	0.33035 0.0001
RECRFC2	0.33035 0.0001	1.00000 0.0

The SAS System 588
13:12 Tuesday, August 13, 1996

Correlation Analysis

2 'VAR' Variables: ENRFC1 ENRFC2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ENRFC1	307	3.7687	1.0171	1157	1.0000	5.0000
ENRFC2	307	3.1954	1.1059	981.0000	1.0000	5.0000

The SAS System 589
13:12 Tuesday, August 13, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.677294
for STANDARDIZED variables: 0.678862

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
ENRFC1	0.513846	.	0.513846	.
ENRFC2	0.513846	.	0.513846	.

The SAS System 590
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	ENRFC1	ENRFC2
ENRFC1	1.00000 0.0	0.51385 0.0001
ENRFC2	0.51385 0.0001	1.00000 0.0

The SAS System 591
13:12 Tuesday, August 13, 1996

Correlation Analysis

2 'VAR' Variables: CARRFC1 CARRFC2

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
CARRFC1	307	3.0293	1.3657	930.0000	1.0000	5.0000
CARRFC2	307	3.1661	1.3939	972.0000	1.0000	5.0000

The SAS System 592
13:12 Tuesday, August 13, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.866626
for STANDARDIZED variables: 0.866728

Deleted Variable	Raw Variables Correlation with Total	Alpha	Std. Variables Correlation with Total	Alpha
CARRFC1	0.764802	.	0.764802	.
CARRFC2	0.764802	.	0.764802	.

The SAS System 593
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	CARRFC1	CARRFC2
CARRFC1	1.00000 0.0	0.76480 0.0001
CARRFC2	0.76480 0.0001	1.00000 0.0

The SAS System 594
13:12 Tuesday, August 13, 1996

Correlation Analysis

6 'VAR' Variables: RECATT RECSN RECBB RECNB RECOC RECRFC

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
RECATT	307	8.9349	1.2689	2743	3.0000	10.0000
RECSN	307	6.6287	1.7128	2035	2.0000	10.0000
RECBB	307	8.7687	1.3751	2692	2.0000	10.0000
RECNB	307	6.1107	1.5658	1876	2.0000	10.0000
RECOC	307	9.7199	2.6947	2984	3.0000	15.0000
RECRFC	307	7.5765	1.7159	2326	2.0000	10.0000

The SAS System 595
13:12 Tuesday, August 13, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.556908
for STANDARDIZED variables: 0.597383

Deleted Variable	Raw Variables Correlation with Total	Alpha	Std. Variables Correlation with Total	Alpha
RECATT	0.352867	0.501067	0.420864	0.514241
RECSN	0.485970	0.424202	0.452181	0.500303
RECBB	0.277893	0.523062	0.357325	0.541777
RECNB	0.502245	0.426794	0.451229	0.500730

The SAS System 596
13:12 Tuesday, August 13, 1996

Correlation Analysis

Deleted Variable	Raw Variables Correlation with Total	Alpha	Std. Variables Correlation with Total	Alpha
RECOC	0.287044	0.553594	0.270204	0.577948
RECRFC	0.041550	0.616778	0.070056	0.654422

The SAS System 597
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	RECATT	RECSN	RECBB	RECNB	RECOC	RECRFC
RECATT	1.00000 0.0	0.22040 0.0001	0.65436 0.0001	0.19115 0.0008	0.05486 0.3381	0.10586 0.0640
RECSN	0.22040 0.0001	1.00000 0.0	0.15629 0.0061	0.50646 0.0001	0.39940 0.0001	0.02305 0.6875
RECBB	0.65436 0.0001	0.15629 0.0061	1.00000 0.0	0.13184 0.0208	0.00274 0.9618	0.11625 0.0418
RECNB	0.19115 0.0008	0.50646 0.0001	0.13184 0.0208	1.00000 0.0	0.42950 0.0001	0.04427 0.4396

The SAS System 598
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	RECATT	RECSN	RECBB	RECNB	RECOC	RECRFC
RECOC	0.05486 0.3381	0.39940 0.0001	0.00274 0.9618	0.42950 0.0001	1.00000 0.0	-0.06249 0.2750
RECRFC	0.10586 0.0640	0.02305 0.6875	0.11625 0.0418	0.04427 0.4396	-0.06249 0.2750	1.00000 0.0

The SAS System 599
13:12 Tuesday, August 13, 1996

Correlation Analysis

7 'VAR' Variables: ENATT ENSN ENBC ENBB ENNB ENOC ENRFC

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ENATT	307	8.6645	1.2763	2660	5.0000	10.0000
ENSN	307	6.7199	1.7130	2063	2.0000	10.0000
ENBC	307	7.2671	2.0437	2231	2.0000	10.0000
ENBB	307	8.7134	1.3824	2675	2.0000	10.0000
ENNB	307	6.0130	1.5232	1846	2.0000	10.0000
ENOC	307	9.2508	2.6933	2840	3.0000	15.0000
ENRFC	307	6.9642	1.8476	2138	2.0000	10.0000

The SAS System 600
13:12 Tuesday, August 13, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.406947
for STANDARDIZED variables: 0.486358

Deleted Variable	Raw Variables Correlation with Total	Alpha	Std. Variables Correlation with Total	Alpha
ENATT	0.351266	0.313076	0.409028	0.363247
ENSN	0.426819	0.241525	0.425310	0.355058
ENBC	-0.117295	0.531948	-0.085170	0.578459
ENBB	0.268572	0.339564	0.332096	0.400942

The SAS System 601
13:12 Tuesday, August 13, 1996

Correlation Analysis

Deleted Variable	Raw Variables Correlation with Total	Alpha	Std. Variables Correlation with Total	Alpha
ENNB	0.470436	0.237923	0.450481	0.342249
ENOC	0.205171	0.369341	0.216843	0.454401
ENRFC	-0.048009	0.484502	-0.036672	0.560021

The SAS System 602
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	ENATT	ENSN	ENBC	ENBB	ENNB	ENOC	ENRFC
ENATT	1.00000 0.0	0.26180 0.0001	0.09962 0.0814	0.55655 0.0001	0.20902 0.0002	0.05023 0.3805	0.02260 0.6932
ENSN	0.26180 0.0001	1.00000 0.0	-0.11951 0.0364	0.18955 0.0008	0.54874 0.0001	0.37653 0.0001	-0.01557 0.7858
ENBC	0.09962 0.0814	-0.11951 0.0364	1.00000 0.0	0.03413 0.5514	-0.05256 0.3587	-0.13986 0.0142	-0.11170 0.0506
ENBB	0.55655 0.0001	0.18955 0.0008	0.03413 0.5514	1.00000 0.0	0.19888 0.0005	0.04483 0.4338	-0.02706 0.6367

The SAS System 603
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	ENATT	ENSN	ENBC	ENBB	ENNB	ENOC	ENRFC
ENNB	0.20902	0.54874	-0.05256	0.19888	1.00000	0.36723	0.03384
	0.0002	0.0001	0.3587	0.0005	0.0	0.0001	0.5547
ENOC	0.05023	0.37653	-0.13986	0.04483	0.36723	1.00000	-0.02511
	0.3805	0.0001	0.0142	0.4338	0.0001	0.0	0.6612
ENRFC	0.02260	-0.01557	-0.11170	-0.02706	0.03384	-0.02511	1.00000
	0.6932	0.7858	0.0506	0.6367	0.5547	0.6612	0.0

The SAS System 604
13:12 Tuesday, August 13, 1996

Correlation Analysis

7 'VAR' Variables: CARATT CARSN CARBC CARBB CARNB CAROC CARRFC

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
CARATT	307	5.6091	2.4301	1722	2.0000	10.0000
CARSN	307	5.0130	1.7168	1539	2.0000	10.0000
CARBC	307	8.3811	2.0263	2573	2.0000	10.0000
CARBB	307	7.7622	1.9060	2383	2.0000	10.0000
CARNB	307	4.9055	1.4910	1506	2.0000	10.0000
CAROC	307	7.0391	2.7017	2161	3.0000	15.0000
CARRFC	307	6.1954	2.5923	1902	2.0000	10.0000

The SAS System 605
13:12 Tuesday, August 13, 1996

Correlation Analysis

Cronbach Coefficient Alpha

for RAW variables : 0.489123
for STANDARDIZED variables: 0.528196

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
CARATT	0.418542	0.351386	0.440814	0.411170
CARSN	0.436116	0.379155	0.453541	0.405350
CARBC	-0.249157	0.628014	-0.246882	0.671084
CARBB	0.303859	0.423431	0.306610	0.470143

The SAS System 606
13:12 Tuesday, August 13, 1996

Correlation Analysis

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
CARNB	0.513306	0.367880	0.524873	0.371984
CAROC	0.132725	0.510741	0.160234	0.529653
CARRFC	0.307787	0.411763	0.308700	0.469257

The SAS System 607
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	CARATT	CARSN	CARBC	CARBB	CARNB	CAROC	CARRFC
CARATT	1.00000	0.39757	-0.25170	0.41166	0.34965	0.03270	0.39190
	0.0	0.0001	0.0001	0.0001	0.0001	0.5682	0.0001
CARSN	0.39757	1.00000	-0.22970	0.17472	0.57370	0.27326	0.17566
	0.0001	0.0	0.0001	0.0021	0.0001	0.0001	0.0020
CARBC	-0.25170	-0.22970	1.00000	-0.04415	-0.14489	-0.04392	-0.19652
	0.0001	0.0001	0.0	0.4408	0.0110	0.4432	0.0005
CARBB	0.41166	0.17472	-0.04415	1.00000	0.22781	-0.08831	0.28128
	0.0001	0.0021	0.4408	0.0	0.0001	0.1226	0.0001

The SAS System 608
13:12 Tuesday, August 13, 1996

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 307

	CARATT	CARSN	CARBC	CARBB	CARNB	CAROC	CARRFC
CARNB	0.34965	0.57370	-0.14489	0.22781	1.00000	0.28811	0.25337
	0.0001	0.0001	0.0110	0.0001	0.0	0.0001	0.0001
CAROC	0.03270	0.27326	-0.04392	-0.08831	0.28811	1.00000	0.06330
	0.5682	0.0001	0.4432	0.1226	0.0001	0.0	0.2689
CARRFC	0.39190	0.17566	-0.19652	0.28128	0.25337	0.06330	1.00000
	0.0001	0.0020	0.0005	0.0001	0.0001	0.2689	0.0

Factor Analysis

The SAS System 66
15:36 Friday, August 16, 1996

Initial Factor Method: Principal Components

Prior Communality Estimates: ONE

Eigenvalues of the Correlation Matrix: Total = 57 Average = 1

	1	2	3	4	5
Eigenvalue	9.1936	7.2645	4.8421	3.1987	3.0402
Difference	1.9290	2.4225	1.6433	0.1586	0.2752
Proportion	0.1613	0.1274	0.0849	0.0561	0.0533
Cumulative	0.1613	0.2887	0.3737	0.4298	0.4831

	6	7	8	9	10
Eigenvalue	2.7650	2.0654	2.0143	1.9202	1.4709
Difference	0.6996	0.0511	0.0941	0.4493	0.0841
Proportion	0.0485	0.0362	0.0353	0.0337	0.0258
Cumulative	0.5317	0.5679	0.6032	0.6369	0.6627

The SAS System 67
15:36 Friday, August 16, 1996

Initial Factor Method: Principal Components

	11	12	13	14	15
Eigenvalue	1.3869	1.2643	1.2209	1.1004	0.9653
Difference	0.1225	0.0434	0.1206	0.1351	0.0369
Proportion	0.0243	0.0222	0.0214	0.0193	0.0169
Cumulative	0.6870	0.7092	0.7306	0.7500	0.7669

	16	17	18	19	20
Eigenvalue	0.9285	0.8911	0.8555	0.8103	0.6833
Difference	0.0373	0.0357	0.0452	0.1269	0.0261
Proportion	0.0163	0.0156	0.0150	0.0142	0.0120
Cumulative	0.7832	0.7988	0.8138	0.8280	0.8400

The SAS System 68
15:36 Friday, August 16, 1996

Initial Factor Method: Principal Components

	21	22	23	24	25
Eigenvalue	0.6573	0.6195	0.5242	0.5100	0.4611
Difference	0.0378	0.0952	0.0143	0.0489	0.0303
Proportion	0.0115	0.0109	0.0092	0.0089	0.0081
Cumulative	0.8516	0.8624	0.8716	0.8806	0.8887

26 27 28 29 30

Eigenvalue	0.4308	0.4076	0.3824	0.3579	0.3318
Difference	0.0233	0.0252	0.0245	0.0260	0.0398
Proportion	0.0076	0.0072	0.0067	0.0063	0.0058
Cumulative	0.8962	0.9034	0.9101	0.9164	0.9222

The SAS System 69
15:36 Friday, August 16, 1996

Initial Factor Method: Principal Components

	31	32	33	34	35
Eigenvalue	0.2921	0.2863	0.2815	0.2629	0.2500
Difference	0.0057	0.0048	0.0186	0.0128	0.0109
Proportion	0.0051	0.0050	0.0049	0.0046	0.0044
Cumulative	0.9273	0.9323	0.9373	0.9419	0.9463

	36	37	38	39	40
Eigenvalue	0.2391	0.2279	0.2150	0.2083	0.2003
Difference	0.0112	0.0129	0.0067	0.0079	0.0017
Proportion	0.0042	0.0040	0.0038	0.0037	0.0035
Cumulative	0.9505	0.9545	0.9582	0.9619	0.9654

The SAS System 70
15:36 Friday, August 16, 1996

Initial Factor Method: Principal Components

	41	42	43	44	45
Eigenvalue	0.1986	0.1805	0.1710	0.1564	0.1531
Difference	0.0181	0.0095	0.0146	0.0033	0.0156
Proportion	0.0035	0.0032	0.0030	0.0027	0.0027
Cumulative	0.9689	0.9720	0.9750	0.9778	0.9805

	46	47	48	49	50
Eigenvalue	0.1374	0.1291	0.1197	0.0992	0.0971
Difference	0.0084	0.0094	0.0205	0.0021	0.0052
Proportion	0.0024	0.0023	0.0021	0.0017	0.0017
Cumulative	0.9829	0.9851	0.9872	0.9890	0.9907

The SAS System 71
15:36 Friday, August 16, 1996

Initial Factor Method: Principal Components

	51	52	53	54	55
Eigenvalue	0.0919	0.0884	0.0810	0.0758	0.0709
Difference	0.0035	0.0074	0.0052	0.0050	0.0037
Proportion	0.0016	0.0016	0.0014	0.0013	0.0012
Cumulative	0.9923	0.9939	0.9953	0.9966	0.9978

	56	57
Eigenvalue	0.0671	0.0556
Difference	0.0116	
Proportion	0.0012	0.0010
Cumulative	0.9990	1.0000

11 factors will be retained by the NFACTOR criterion.

The SAS System 72
15:36 Friday, August 16, 1996

Initial Factor Method: Principal Components

Scree Plot of Eigenvalues

```
E   |
i 10 +
g   |        1
e   |         2
n   |
v  5 +         3
a   |           4
l   |            56789
u   |                 012345678901
e  0 +                            234567890123456789012345678901234567
s    ------+----+----+----+----+----+----+----+----+----+----+----+------
           0    5   10   15   20   25   30   35   40   45   50   55   60
                                     Number
```

The SAS System 73
15:36 Friday, August 16, 1996

Initial Factor Method: Principal Components

Factor Pattern

	FACTOR1	FACTOR2	FACTOR3	FACTOR4	FACTOR5	FACTOR6
RECBEH1	52 *	-12	-34	20	-23	1
ENBEH1	52 *	-7	-19	16	-13	-10
CARBEH1	23	-7	39	14	-33	-20
RECINT1	54 *	-29	-33	15	-15	-2
ENINT1	51 *	-19	-20	8	-14	-14
CARINT1	25	-13	41 *	12	-36	-17
RECATT1	55 *	-52 *	-9	8	15	-1
RECATT2	59 *	-49 *	-6	10	14	1
ENATT1	59 *	-43 *	6	3	3	-1
ENATT2	58 *	-36	11	9	5	-4
CARATT1	36	-20	61 *	14	-18	-13

The SAS System 74
15:36 Friday, August 16, 1996

Initial Factor Method: Principal Components

Factor Pattern

	FACTOR1	FACTOR2	FACTOR3	FACTOR4	FACTOR5	FACTOR6
CARATT2	37	-15	61 *	14	-15	-10
RECSN1	61 *	21	-7	-40 *	-26	18
RECSN2	61 *	16	-11	-45 *	-28	17
ENSN1	58 *	23	-7	-50 *	-25	8
ENSN2	59 *	22	-3	-50 *	-27	7
CARSN1	28	23	62 *	1	-12	19
CARSN2	26	16	61 *	2	-12	13
RECBC1	9	-23	-19	47 *	-6	44 *
RECBC2	23	-18	-33	42 *	-2	47 *
ENBC1	-2	-18	-7	44 *	-10	57 *
ENBC2	10	-15	-8	49 *	-16	48 *

The SAS System 75
15:36 Friday, August 16, 1996

Initial Factor Method: Principal Components

Factor Pattern

	FACTOR1	FACTOR2	FACTOR3	FACTOR4	FACTOR5	FACTOR6
CARBC1	11	-10	-44 *	23	10	26
CARBC2	0	0	-49 *	18	16	23
RECBB1	49 *	-55 *	-11	9	21	-3
RECBB2	53 *	-60 *	-4	8	23	-5
ENBB1	56 *	-47 *	6	2	20	-10
ENBB2	58 *	-53 *	5	4	19	-10
CARBB1	36	-39	35	4	24	-3
CARBB2	34	-47 *	34	4	13	0
RECNB1	55 *	19	-20	-21	-4	22
RECNB2	42 *	25	7	-23	6	41 *
ENNB1	63 *	28	6	-24	-9	26

The SAS System 76
15:36 Friday, August 16, 1996

Initial Factor Method: Principal Components

Factor Pattern

	FACTOR1	FACTOR2	FACTOR3	FACTOR4	FACTOR5	FACTOR6
ENNB2	43 *	25	7	-32	9	33
CARNB1	23	19	61 *	14	5	30
CARNB2	32	24	44 *	-6	6	39
RECEM1	-23	47 *	22	14	-9	34
ENEM1	-18	48 *	25	18	-7	36
CAREM1	-17	42 *	-5	12	3	27
RECAP1	46 *	26	-33	7	-2	-5
ENAP1	46 *	36	-29	10	6	-13
CARAP1	20	43 *	24	34	7	-7
RECOC1	42 *	46 *	-25	24	1	-14
RECOC2	45 *	50 *	-22	9	12	-9

The SAS System 77
15:36 Friday, August 16, 1996

Initial Factor Method: Principal Components

Factor Pattern

	FACTOR1	FACTOR2	FACTOR3	FACTOR4	FACTOR5	FACTOR6
RECOC3	51 *	56 *	-20	-1	4	-14
ENOC1	47 *	57 *	-22	14	11	-21
ENOC2	46 *	57 *	-20	16	16	-24
ENOC3	48 *	60 *	-16	9	12	-23
CAROC1	17	61 *	21	34	22	-11
CAROC2	18	61 *	21	36	36	-17
CAROC3	19	59 *	20	31	34	-19
RECRFC1	0	-10	-20	-29	49 *	18
RECRFC2	-2	-3	11	-22	60 *	22
ENRFC1	-2	-6	-4	-29	62 *	14
ENRFC2	-10	6	9	-22	65 *	17

The SAS System 78
15:36 Friday, August 16, 1996

Initial Factor Method: Principal Components

Factor Pattern

	FACTOR1	FACTOR2	FACTOR3	FACTOR4	FACTOR5	FACTOR6
CARRFC1	23	-6	45 *	-1	27	-4
CARRFC2	20	-12	42 *	-1	24	-4

The SAS System 79
15:36 Friday, August 16, 1996

Initial Factor Method: Principal Components

Factor Pattern

	FACTOR7	FACTOR8	FACTOR9	FACTOR10	FACTOR11
RECBEH1	12	23	27	-3	-29
ENBEH1	54 *	-11	-4	-15	15
CARBEH1	15	5	5	50 *	17
RECINT1	26	16	28	-4	-20
ENINT1	52 *	-5	2	-18	17
CARINT1	9	4	12	45 *	9
RECATT1	0	12	5	-4	-14
RECATT2	8	21	7	-8	-16
ENATT1	28	6	-17	-12	7
ENATT2	30	15	-14	-12	8
CARATT1	2	-3	25	15	10

The SAS System 80
15:36 Friday, August 16, 1996

Initial Factor Method: Principal Components

Factor Pattern

	FACTOR7	FACTOR8	FACTOR9	FACTOR10	FACTOR11
CARATT2	-6	6	20	15	7
RECSN1	-11	23	-5	-2	-16
RECSN2	-11	21	-7	-4	-6
ENSN1	6	11	-16	-3	24
ENSN2	7	8	-16	-4	26
CARSN1	-15	29	-14	2	-1
CARSN2	-18	31	-15	2	-5
RECBC1	-16	13	6	6	25
RECBC2	-14	6	15	8	27
ENBC1	-19	13	3	-21	21
ENBC2	-17	18	-6	-21	22

The SAS System 81
15:36 Friday, August 16, 1996

Initial Factor Method: Principal Components

Factor Pattern

	FACTOR7	FACTOR8	FACTOR9	FACTOR10	FACTOR11
CARBC1	5	-19	-21	50 *	0
CARBC2	2	-26	-25	44 *	-1
RECBB1	-7	-10	-12	-7	-18
RECBB2	-6	-12	-14	1	-15
ENBB1	-3	-19	-34	-3	-6
ENBB2	-6	-19	-27	1	-5
CARBB1	-10	-12	-5	18	-15
CARBB2	-21	-10	-5	14	-5
RECNB1	-7	8	14	12	-29
RECNB2	-12	-50 *	6	-6	-3
ENNB1	1	-3	-12	1	3

The SAS System 82
15:36 Friday, August 16, 1996

Initial Factor Method: Principal Components

Factor Pattern

	FACTOR7	FACTOR8	FACTOR9	FACTOR10	FACTOR11
ENNB2	0	-56 *	3	-6	12
CARNB1	2	10	-10	4	-19
CARNB2	-3	-35	-2	-6	-7
RECEM1	49 *	-6	4	8	-23
ENEM1	47 *	-7	4	11	-21
CAREM1	40	-5	5	-1	-27
RECAP1	-17	-3	37	2	-19
ENAP1	3	-16	24	3	13
CARAP1	3	-10	-13	-23	3
RECOC1	-22	-2	22	4	-14
RECOC2	-29	4	18	3	-9

The SAS System 83
15:36 Friday, August 16, 1996

Initial Factor Method: Principal Components

Factor Pattern

	FACTOR7	FACTOR8	FACTOR9	FACTOR10	FACTOR11
RECOC3	-18	13	11	9	-6
ENOC1	-1	-5	1	10	15
ENOC2	1	-2	-10	9	22
ENOC3	5	-1	-8	8	24
CAROC1	0	8	-24	-15	-6
CAROC2	-2	10	-20	-10	-6
CAROC3	-4	16	-23	-7	-5
RECRFC1	-2	26	12	9	5
RECRFC2	22	28	17	7	8
ENRFC1	11	32	4	17	13
ENRFC2	23	26	14	13	16

The SAS System 84
15:36 Friday, August 16, 1996

Initial Factor Method: Principal Components

Factor Pattern

	FACTOR7	FACTOR8	FACTOR9	FACTOR10	FACTOR11
CARRFC1	-1	-22	53 *	-17	11
CARRFC2	-2	-23	49 *	-14	18

NOTE: Printed values are multiplied by 100 and rounded to the nearest integer. Values greater than 0.4 have been flagged by an '*'.

The SAS System 85
15:36 Friday, August 16, 1996

Initial Factor Method: Principal Components

Variance explained by each factor

FACTOR1	FACTOR2	FACTOR3	FACTOR4	FACTOR5	FACTOR6
9.193562	7.264546	4.842055	3.198743	3.040183	2.765008

FACTOR7	FACTOR8	FACTOR9	FACTOR10	FACTOR11
2.065384	2.014268	1.920174	1.470915	1.386860

The SAS System 86
15:36 Friday, August 16, 1996

Initial Factor Method: Principal Components

Final Communality Estimates: Total = 39.161697

RECBEH1	ENBEH1	CARBEH1	RECINT1	ENINT1	CARINT1	RECATT1
0.710231	0.713095	0.687196	0.744747	0.717477	0.653046	0.646912
RECATT2	ENATT1	ENATT2	CARATT1	CARATT2	RECSN1	RECSN2
0.713787	0.667903	0.642615	0.711443	0.650027	0.769757	0.789347
ENSN1	ENSN2	CARSN1	CARSN2	RECBC1	RECBC2	ENBC1
0.817787	0.822538	0.697013	0.648092	0.621425	0.721198	0.713526
ENBC2	CARBC1	CARBC2	RECBB1	RECBB2	ENBB1	ENBB2
0.695828	0.676988	0.670830	0.686105	0.771709	0.751990	0.791254

The SAS System 87
15:36 Friday, August 16, 1996

Initial Factor Method: Principal Components

CARBB1	CARBB2	RECNB1	RECNB2	ENNB1	ENNB2	CARNB1
0.557144	0.547900	0.606577	0.749312	0.627667	0.807664	0.628032
CARNB2	RECEM1	ENEM1	CAREM1	RECAP1	ENAP1	CARAP1
0.646428	0.766375	0.776021	0.528121	0.592628	0.552247	0.490438
RECOC1	RECOC2	RECOC3	ENOC1	ENOC2	ENOC3	CAROC1
0.656417	0.657626	0.704527	0.701967	0.751492	0.772958	0.721382
CAROC2	CAROC3	RECRFC1	RECRFC2	ENRFC1	ENRFC2	CARRFC1
0.803122	0.759729	0.504144	0.637696	0.652152	0.707113	0.712735
CARRFC2						
0.638213						

The SAS System 88
15:36 Friday, August 16, 1996

Rotation Method: Varimax

Orthogonal Transformation Matrix

	1	2	3	4	5	6
1	0.58782	0.44865	0.49556	0.20709	0.22801	0.07383
2	-0.62783	0.36047	0.22578	0.56757	-0.08095	-0.15572

3	0.05387	-0.42148	-0.02417	0.26655	0.60567	-0.12463
4	0.12214	0.14496	-0.55908	0.40522	0.16503	0.53698
5	0.27573	0.03857	-0.35317	0.33665	-0.27583	-0.12198
6	-0.05885	-0.16413	0.28120	-0.19698	-0.13691	0.63312
7	-0.00576	-0.21827	-0.04185	-0.03930	0.05647	-0.22039
8	-0.04701	0.01857	0.29950	0.09913	0.09523	0.22950
9	-0.20924	0.56659	-0.30200	-0.44510	0.21989	0.08775
10	-0.07904	0.14049	-0.03091	-0.16381	0.58701	-0.15783
11	-0.33272	-0.23011	0.05359	0.10615	0.21767	0.34183

Rotation Method: Varimax

Orthogonal Transformation Matrix

	7	8	9	10	11
1	0.20455	-0.01841	0.25063	-0.01484	-0.04525
2	0.14167	-0.01823	-0.04379	0.03564	0.21999
3	0.26029	0.01864	-0.26546	-0.44521	0.16932
4	-0.18955	-0.28805	0.08876	0.11629	0.17724
5	0.19331	0.72950	-0.12149	0.06618	-0.06916
6	0.35212	0.21215	-0.20591	0.15744	0.44267
7	-0.09452	0.19094	0.72911	0.05539	0.56321
8	-0.76639	0.40202	-0.10903	-0.27376	0.01930
9	0.17111	0.22133	0.07867	-0.44741	0.07207
10	-0.10393	0.21186	-0.20981	0.68985	0.03380
11	0.19153	0.21654	0.45393	0.05933	-0.60401

Rotation Method: Varimax

Rotated Factor Pattern

	FACTOR1	FACTOR2	FACTOR3	FACTOR4	FACTOR5	FACTOR6
RECBEH1	36	54 *	17	-18	3	20
ENBEH1	30	13	15	8	5	4
CARBEH1	3	-2	6	1	79 *	-7
RECINT1	46 *	44 *	12	-26	4	16
ENINT1	34	11	15	-3	4	3
CARINT1	8	1	6	-7	78 *	-5
RECATT1	73 *	17	7	-14	6	14
RECATT2	74 *	18	11	-11	8	17
ENATT1	65 *	-10	23	2	13	9
ENATT2	60 *	-7	21	10	18	10
CARATT1	25	0	-1	2	72 *	2

Rotation Method: Varimax

Rotated Factor Pattern

	FACTOR1	FACTOR2	FACTOR3	FACTOR4	FACTOR5	FACTOR6
CARATT2	24	2	4	8	69 *	4
RECSN1	14	31	80 *	-2	2	-3
RECSN2	14	28	83 *	-7	0	-1
ENSN1	1	12	83 *	4	6	-9
ENSN2	1	9	82 *	4	9	-9
CARSN1	3	-12	40 *	38	43 *	13
CARSN2	8	-13	36	34	42 *	11
RECBC1	9	5	-9	-7	7	75 *
RECBC2	12	23	-2	-12	1	75 *
ENBC1	2	-10	-5	-3	-8	83 *
ENBC2	8	-7	3	7	-4	81 *

Rotation Method: Varimax

Rotated Factor Pattern

	FACTOR1	FACTOR2	FACTOR3	FACTOR4	FACTOR5	FACTOR6
CARBC1	15	13	-6	-9	-3	20
CARBC2	7	11	-10	-4	-17	13
RECBB1	80 *	7	-1	-9	-7	7
RECBB2	85 *	4	-1	-9	3	4
ENBB1	80 *	-10	11	9	4	-5
ENBB2	83 *	-5	8	3	8	-2
CARBB1	61 *	-6	-6	2	32	-7
CARBB2	58 *	-10	-3	-6	33	4
RECNB1	19	52 *	48 *	-8	-3	-1
RECNB2	9	20	32	3	-8	3
ENNB1	14	20	64 *	18	10	4

Rotation Method: Varimax

Rotated Factor Pattern

	FACTOR1	FACTOR2	FACTOR3	FACTOR4	FACTOR5	FACTOR6
ENNB2	5	12	34	4	-6	-7
CARNB1	14	-12	17	36	34	11
CARNB2	10	-3	22	22	15	5
RECEM1	-38	-9	-3	16	7	-2
ENEM1	-36	-6	-3	20	12	1
CAREM1	-28	7	-5	12	-16	-2
RECAP1	8	74 *	13	0	-5	4
ENAP1	-2	59 *	8	19	0	0
CARAP1	-4	8	-3	61 *	4	5
RECOC1	-1	74 *	7	30	-1	4
RECOC2	-2	70 *	19	33	-5	1

Rotation Method: Varimax

Rotated Factor Pattern

	FACTOR1	FACTOR2	FACTOR3	FACTOR4	FACTOR5	FACTOR6
RECOC3	-6	67 *	34	36	2	-8
ENOC1	-10	55 *	18	49 *	4	-7
ENOC2	-8	47 *	18	58 *	3	-7
ENOC3	-12	45 *	26	56 *	6	-10
CAROC1	-8	14	1	81 *	-1	-2
CAROC2	-5	19	-6	85 *	-1	-6
CAROC3	-4	18	0	83 *	1	-8
RECRFC1	8	7	6	-14	-21	1
RECRFC2	6	-7	-2	2	-3	-2
ENRFC1	7	-6	4	1	-9	-6
ENRFC2	-5	-8	-6	8	-3	-6

Rotation Method: Varimax

Rotated Factor Pattern

	FACTOR1	FACTOR2	FACTOR3	FACTOR4	FACTOR5	FACTOR6
CARRFC1	15	16	-23	1	28	-4
CARRFC2	15	11	-23	-3	29	-1

Rotation Method: Varimax

Rotated Factor Pattern

	FACTOR7	FACTOR8	FACTOR9	FACTOR10	FACTOR11
RECBEH1	-27	-13	22	-6	21
ENBEH1	3	-12	74 *	5	12
CARBEH1	-9	-12	13	11	0
RECINT1	-22	-4	38	-6	17
ENINT1	-3	-8	74 *	-3	5
CARINT1	-6	-15	6	2	2
RECATT1	-8	11	11	-6	-7
RECATT2	-13	13	16	-12	2
ENATT1	0	4	39	-5	-1
ENATT2	-6	7	39	-10	2
CARATT1	17	-9	4	-29	0

Rotation Method: Varimax

Rotated Factor Pattern

	FACTOR7	FACTOR8	FACTOR9	FACTOR10	FACTOR11
CARATT2	12	-6	-4	-29	-1
RECSN1	2	-3	-6	-8	7
RECSN2	4	-3	0	-6	-2
ENSN1	14	3	25	1	-14
ENSN2	17	1	28	-1	-15
CARSN1	6	1	-28	-26	16
CARSN2	0	-2	-32	-27	12
RECBC1	-4	1	2	17	-3
RECBC2	6	6	11	24	-5
ENBC1	3	-5	-5	-3	5
ENBC2	-5	-13	1	-1	2

The SAS System 98
15:36 Friday, August 16, 1996

Rotation Method: Varimax

Rotated Factor Pattern

	FACTOR7	FACTOR8	FACTOR9	FACTOR10	FACTOR11
CARBC1	2	4	4	76 *	8
CARBC2	6	4	0	77 *	5
RECBB1	4	-1	5	6	-12
RECBB2	7	1	5	9	-14
ENBB1	15	-6	9	13	-18
ENBB2	14	-5	9	12	-21
CARBB1	19	9	-18	1	-4
CARBB2	17	2	-19	-3	-15
RECNB1	10	7	-9	7	20
RECNB2	75 *	-4	-6	8	13
ENNB1	31	2	7	5	10

The SAS System 99
15:36 Friday, August 16, 1996

Rotation Method: Varimax

Rotated Factor Pattern

	FACTOR7	FACTOR8	FACTOR9	FACTOR10	FACTOR11
ENNB2	80 *	1	11	9	5
CARNB1	18	5	-27	-17	41 *
CARNB2	64 *	-4	-14	-8	29
RECEM1	11	1	6	5	75 *
ENEM1	14	2	5	7	75 *
CAREM1	5	4	9	9	62 *
RECAP1	8	-7	3	-2	1
ENAP1	20	0	31	9	-8
CARAP1	17	-18	9	-13	13
RECOC1	4	-13	-1	4	0
RECOC2	9	1	-9	2	-7

The SAS System 100
15:36 Friday, August 16, 1996

Rotation Method: Varimax

Rotated Factor Pattern

	FACTOR7	FACTOR8	FACTOR9	FACTOR10	FACTOR11
RECOC3	1	3	0	5	-5
ENOC1	10	0	24	19	-10
ENOC2	7	4	27	21	-15
ENOC3	9	5	30	18	-13
CAROC1	2	-4	-4	-6	17
CAROC2	1	7	-6	-5	13
CAROC3	-5	9	-8	-4	10
RECRFC1	-3	64 *	-9	5	-9
RECRFC2	5	78 *	-1	-9	13
ENRFC1	-4	79 *	-5	7	-5
ENRFC2	6	82 *	1	-1	7

The SAS System 101
15:36 Friday, August 16, 1996

Rotation Method: Varimax

Rotated Factor Pattern

	FACTOR7	FACTOR8	FACTOR9	FACTOR10	FACTOR11
CARRFC1	50 *	21	6	-49 *	-3
CARRFC2	48 *	20	8	-43 *	-9

NOTE: Printed values are multiplied by 100 and rounded to the nearest integer. Values greater than 0.4 have been flagged by an '*'.

The SAS System 102
15:36 Friday, August 16, 1996

Rotation Method: Varimax

Variance explained by each factor

FACTOR1	FACTOR2	FACTOR3	FACTOR4	FACTOR5	FACTOR6
6.593998	4.618843	4.593407	4.514055	3.362281	2.797270

FACTOR7	FACTOR8	FACTOR9	FACTOR10	FACTOR11
2.754423	2.640898	2.604288	2.342677	2.339559

The SAS System 103
15:36 Friday, August 16, 1996

Rotation Method: Varimax

Final Communality Estimates: Total = 39.161697

RECBEH1	ENBEH1	CARBEH1	RECINT1	ENINT1	CARINT1	RECATT1
0.710231	0.713095	0.687196	0.744747	0.717477	0.653046	0.646912
RECATT2	ENATT1	ENATT2	CARATT1	CARATT2	RECSN1	RECSN2
0.713787	0.667903	0.642615	0.711443	0.650027	0.769757	0.789347
ENSN1	ENSN2	CARSN1	CARSN2	RECBC1	RECBC2	ENBC1
0.817787	0.822538	0.697013	0.648092	0.621425	0.721198	0.713526
ENBC2	CARBC1	CARBC2	RECBB1	RECBB2	ENBB1	ENBB2
0.695828	0.676988	0.670830	0.686105	0.771709	0.751990	0.791254

The SAS System 104
15:36 Friday, August 16, 1996

Rotation Method: Varimax

CARBB1	CARBB2	RECNB1	RECNB2	ENNB1	ENNB2	CARNB1
0.557144	0.547900	0.606577	0.749312	0.627667	0.807664	0.628032
CARNB2	RECEM1	ENEM1	CAREM1	RECAP1	ENAP1	CARAP1
0.646428	0.766375	0.776021	0.528121	0.592628	0.552247	0.490438
RECOC1	RECOC2	RECOC3	ENOC1	ENOC2	ENOC3	CAROC1
0.656417	0.657626	0.704527	0.701967	0.751492	0.772958	0.721382
CAROC2	CAROC3	RECRFC1	RECRFC2	ENRFC1	ENRFC2	CARRFC1
0.803122	0.759729	0.504144	0.637696	0.652152	0.707113	0.712735
CARRFC2						
0.638213						

Regression (Hierarchical)

The SAS System 648
13:12 Tuesday, August 13, 1996

Forward Selection Procedure for Dependent Variable RECBEH1

Step 1 Variable RECINT1 Entered R-square = 0.58510214 C(p) = 2.00000000

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	1	162.54785364	162.54785364	430.12	0.0001
Error	305	115.26322128	0.37791220		
Total	306	277.81107492			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	0.53887790	0.16040487	4.26517195	11.29	0.0009
RECINT1	0.79534276	0.03834945	162.54785364	430.12	0.0001

Bounds on condition number: 1, 1

The SAS System 649
13:12 Tuesday, August 13, 1996

No other variable met the 0.5000 significance level for entry into the model.

Summary of Forward Selection Procedure for Dependent Variable RECBEH1

Step	Variable Entered	Number In	Partial R**2	Model R**2	C(p)	F	Prob>F
1	RECINT1	1	0.5851	0.5851	2.0000	430.1207	0.0001

The SAS System 650
13:12 Tuesday, August 13, 1996

Model: MODEL1
Dependent Variable: RECBEH1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	162.54785	162.54785	430.121	0.0001
Error	305	115.26322	0.37791		
C Total	306	277.81107			

Root MSE	0.61475	R-square	0.5851
Dep Mean	3.78502	Adj R-sq	0.5837
C.V.	16.24156		

The SAS System 651
13:12 Tuesday, August 13, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	0.538878	0.16040487	3.359	0.0009
RECINT1	1	0.795343	0.03834945	20.739	0.0001

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
RECINT1	1	0.76491969

The SAS System 652
13:12 Tuesday, August 13, 1996

Forward Selection Procedure for Dependent Variable ENBEH1

Step 1 Variable ENINT1 Entered R-square = 0.49964556 C(p) = 2.00000000

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	1	110.62185155	110.62185155	304.57	0.0001
Error	305	110.77879992	0.36320918		
Total	306	221.40065147			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	1.03998536	0.15372316	16.62389139	45.77	0.0001
ENINT1	0.66616140	0.03817134	110.62185155	304.57	0.0001

Bounds on condition number: 1, 1
The SAS System 653
13:12 Tuesday, August 13, 1996

No other variable met the 0.5000 significance level for entry into the model.

Summary of Forward Selection Procedure for Dependent Variable ENBEH1

Step	Variable Entered	Number In	Partial R**2	Model R**2	C(p)	F	Prob>F
1	ENINT1	1	0.4996	0.4996	2.0000	304.5679	0.0001

The SAS System 654
13:12 Tuesday, August 13, 1996

Model: MODEL1
Dependent Variable: ENBEH1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	110.62185	110.62185	304.568	0.0001
Error	305	110.77880	0.36321		
C Total	306	221.40065			

Root MSE	0.60267	R-square	0.4996
Dep Mean	3.65472	Adj R-sq	0.4980
C.V.	16.49012		

The SAS System 655
13:12 Tuesday, August 13, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	1.039985	0.15372316	6.765	0.0001
ENINT1	1	0.666161	0.03817134	17.452	0.0001

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
ENINT1	1	0.70685611

The SAS System 656
13:12 Tuesday, August 13, 1996

Forward Selection Procedure for Dependent Variable CARBEH1

Step 1 Variable CARINT1 Entered R-square = 0.57194140 C(p) = 2.00000000

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	1	134.12864237	134.12864237	407.52	0.0001
Error	305	100.38601561	0.32913448		
Total	306	234.51465798			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	0.39111995	0.06277436	12.77699379	38.82	0.0001
CARINT1	0.62158460	0.03079117	134.12864237	407.52	0.0001

Bounds on condition number: 1, 1
The SAS System 657
13:12 Tuesday, August 13, 1996

No other variable met the 0.5000 significance level for entry into the model.

Summary of Forward Selection Procedure for Dependent Variable CARBEH1

Step	Variable Entered	Number In	Partial R**2	Model R**2	C(p)	F	Prob>F
1	CARINT1	1	0.5719	0.5719	2.0000	407.5193	0.0001

The SAS System 658
13:12 Tuesday, August 13, 1996

Model: MODEL1
Dependent Variable: CARBEH1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	134.12864	134.12864	407.519	0.0001
Error	305	100.38602	0.32913		
C Total	306	234.51466			

Root MSE	0.57370	R-square	0.5719
Dep Mean	1.47231	Adj R-sq	0.5705
C.V.	38.96607		

The SAS System 659
13:12 Tuesday, August 13, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	0.391120	0.06277436	6.231	0.0001
CARINT1	1	0.621585	0.03079117	20.187	0.0001

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
CARINT1	1	0.75626808

The SAS System 660
13:12 Tuesday, August 13, 1996

Forward Selection Procedure for Dependent Variable RECINT1

Step 1 Variable RECATT Entered R-square = 0.31793140 C(p) = 24.53694596

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	1	81.69697690	81.69697690	142.17	0.0001
Error	305	175.26719248	0.57464653		

Total	306	256.96416938

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	0.44311706	0.30819097	1.18794932	2.07	0.1515
RECATT	0.40720491	0.03415155	81.69697690	142.17	0.0001

Bounds on condition number: 1, 1

The SAS System 661
13:12 Tuesday, August 13, 1996

Step 2 Variable RECBC Entered R-square = 0.34480094 C(p) = 13.63389273

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	2	88.60148628	44.30074314	79.99	0.0001
Error	304	168.36268310	0.55382462		
Total	306	256.96416938			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	0.11159357	0.31679016	0.06872381	0.12	0.7249
RECATT	0.37836981	0.03450740	66.58567231	120.23	0.0001
RECBC	0.07574220	0.02145150	6.90450937	12.47	0.0005

The SAS System 662
13:12 Tuesday, August 13, 1996

Bounds on condition number: 1.059332, 4.237329

Step 3 Variable RECSN Entered R-square = 0.36902756 C(p) = 4.00000000

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	3	94.82685945	31.60895315	59.07	0.0001
Error	303	162.13730993	0.53510663		
Total	306	256.96416938			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	-0.24934721	0.32888048	0.30759067	0.57	0.4489
RECATT	0.35107168	0.03485066	54.30124846	101.48	0.0001
RECSN	0.08556934	0.02508740	6.22537317	11.63	0.0007

The SAS System 663
13:12 Tuesday, August 13, 1996

RECBC	0.08058056	0.02113354	7.77958555	14.54	0.0002

Bounds on condition number: 1.118309, 9.714741

No other variable met the 0.5000 significance level for entry into the model.

Summary of Forward Selection Procedure for Dependent Variable RECINT1

Step	Variable Entered	Number In	Partial R**2	Model R**2	C(p)	F	Prob>F
1	RECATT	1	0.3179	0.3179	24.5369	142.1691	0.0001
2	RECBC	2	0.0269	0.3448	13.6339	12.4670	0.0005
3	RECSN	3	0.0242	0.3690	4.0000	11.6339	0.0007

The SAS System 664
13:12 Tuesday, August 13, 1996

Model: MODEL1
Dependent Variable: RECINT1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	3	94.82686	31.60895	59.070	0.0001
Error	303	162.13731	0.53511		
C Total	306	256.96417			

Root MSE	0.73151	R-square	0.3690
Dep Mean	4.08143	Adj R-sq	0.3628
C.V.	17.92287		

The SAS System 665
13:12 Tuesday, August 13, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	-0.249347	0.32888048	-0.758	0.4489
RECATT	1	0.351072	0.03485066	10.074	0.0001
RECSN	1	0.085569	0.02508740	3.411	0.0007
RECBC	1	0.080581	0.02113354	3.813	0.0002

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
RECATT	1	0.48612673
RECSN	1	0.15993359
RECBC	1	0.17948929

The SAS System 666
13:12 Tuesday, August 13, 1996

Forward Selection Procedure for Dependent Variable ENINT1

Step 1 Variable ENATT Entered R-square = 0.26158566 C(p) = 11.37735903

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	1	65.20725552	65.20725552	108.05	0.0001
Error	305	184.06961744	0.60350694		
Total	306	249.27687296			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	0.79119342	0.30473530	4.06819790	6.74	0.0099
ENATT	0.36169309	0.03479633	65.20725552	108.05	0.0001

Bounds on condition number: 1, 1

The SAS System 667
13:12 Tuesday, August 13, 1996

Step 2 Variable ENSN Entered R-square = 0.28799882 C(p) = 2.13204847

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	2	71.79144473	35.89572236	61.48	0.0001
Error	304	177.48542824	0.58383365		
Total	306	249.27687296			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	0.46509909	0.31506440	1.27227629	2.18	0.1409
ENATT	0.33051572	0.03546134	50.71811383	86.87	0.0001
ENSN	0.08872650	0.02642085	6.58418921	11.28	0.0009

The SAS System 668
13:12 Tuesday, August 13, 1996

Bounds on condition number: 1.073585, 4.294342

No other variable met the 0.5000 significance level for entry into the model.

Summary of Forward Selection Procedure for Dependent Variable ENINT1

Step	Variable Entered	Number In	Partial R**2	Model R**2	C(p)	F	Prob>F
1	ENATT	1	0.2616	0.2616	11.3774	108.0472	0.0001
2	ENSN	2	0.0264	0.2880	2.1320	11.2775	0.0009

The SAS System 669
13:12 Tuesday, August 13, 1996

Model: MODEL1
Dependent Variable: ENINT1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	2	71.79144	35.89572	61.483	0.0001
Error	304	177.48543	0.58383		
C Total	306	249.27687			

Root MSE	0.76409	R-square	0.2880
Dep Mean	3.92508	Adj R-sq	0.2833
C.V.	19.46686		

The SAS System 670
13:12 Tuesday, August 13, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	0.465099	0.31506440	1.476	0.1409
ENATT	1	0.330516	0.03546134	9.320	0.0001
ENSN	1	0.088727	0.02642085	3.358	0.0009

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
ENATT	1	0.46736789
ENSN	1	0.16839472

The SAS System 671
13:12 Tuesday, August 13, 1996

Forward Selection Procedure for Dependent Variable CARINT1

Step 1 Variable CARATT Entered R-square = 0.21555365 C(p) = 2.36302250

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	1	74.83011662	74.83011662	83.81	0.0001
Error	305	272.32297784	0.89286222		
Total	306	347.15309446			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	0.59800136	0.13584341	17.30261086	19.38	0.0001
CARATT	0.20349221	0.02222807	74.83011662	83.81	0.0001

Bounds on condition number: 1, 1

The SAS System 672
13:12 Tuesday, August 13, 1996

Step 2 Variable CARBC Entered R-square = 0.21915056 C(p) = 2.96284730

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	2	76.07879394	38.03939697	42.66	0.0001
Error	304	271.07430053	0.89169178		
Total	306	347.15309446			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	0.90935491	0.29606707	8.41204093	9.43	0.0023
CARATT	0.19665567	0.02295247	65.45894915	73.41	0.0001
CARBC	-0.03257405	0.02752669	1.24867731	1.40	0.2376

The SAS System 673
13:12 Tuesday, August 13, 1996

Bounds on condition number: 1.06764, 4.270559

Step 3 Variable CARSN Entered R-square = 0.22162401 C(p) = 4.00000000

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	3	76.93746190	25.64582063	28.76	0.0001
Error	303	270.21563256	0.89180077		
Total	306	347.15309446			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	0.75441105	0.33555982	4.50758601	5.05	0.0253
CARATT	0.18794520	0.02461057	52.01002117	58.32	0.0001
CARSN	0.03399057	0.03464014	0.85866797	0.96	0.3273

The SAS System 674
13:12 Tuesday, August 13, 1996

CARBC	-0.02858815	0.02782646	0.94129122	1.06	0.3051

Bounds on condition number: 1.227316, 10.59538

No other variable met the 0.5000 significance level for entry into the model.

Summary of Forward Selection Procedure for Dependent Variable CARINT1

Step	Variable Entered	Number In	Partial R**2	Model R**2	C(p)	F	Prob>F
1	CARATT	1	0.2156	0.2156	2.3630	83.8093	0.0001
2	CARBC	2	0.0036	0.2192	2.9628	1.4003	0.2376
3	CARSN	3	0.0025	0.2216	4.0000	0.9628	0.3273

The SAS System 675
13:12 Tuesday, August 13, 1996

Model: MODEL1
Dependent Variable: CARINT1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	3	76.93746	25.64582	28.757	0.0001
Error	303	270.21563	0.89180		
C Total	306	347.15309			

Root MSE	0.94435	R-square	0.2216
Dep Mean	1.73941	Adj R-sq	0.2139
C.V.	54.29140		

The SAS System 676
13:12 Tuesday, August 13, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	0.754411	0.33555982	2.248	0.0253
CARATT	1	0.187945	0.02461057	7.637	0.0001
CARSN	1	0.033991	0.03464014	0.981	0.3273
CARBC	1	-0.028588	0.02782646	-1.027	0.3051

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
CARATT	1	0.42880628
CARSN	1	0.05478840
CARBC	1	-0.05438652

The SAS System 677
13:12 Tuesday, August 13, 1996

Forward Selection Procedure for Dependent Variable RECATT

Step 1 Variable RECBB Entered R-square = 0.42819283 C(p) = 8.61608187

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	1	210.96935143	210.96935143	228.40	0.0001
Error	305	281.72771698	0.92369743		
Total	306	492.69706840			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	3.63986849	0.35463216	97.30718213	105.35	0.0001
RECBB	0.60384858	0.03995611	210.96935143	228.40	0.0001

Bounds on condition number: 1, 1

The SAS System 678
13:12 Tuesday, August 13, 1996

Step 2 Variable RECEM1 Entered R-square = 0.44216814 C(p) = 3.00000000

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	2	217.85494393	108.92747197	120.48	0.0001
Error	304	274.84212447	0.90408594		
Total	306	492.69706840			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	4.36891683	0.43918317	89.46762194	98.96	0.0001
RECBB	0.55508947	0.04329846	148.59038567	164.35	0.0001
RECEM1	-0.18042557	0.06537810	6.88559250	7.62	0.0061

The SAS System 679
13:12 Tuesday, August 13, 1996

Bounds on condition number: 1.199771, 4.799086

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No other variable met the 0.5000 significance level for entry into the model.

   Summary of Forward Selection Procedure for Dependent Variable RECATT

       Variable    Number   Partial      Model
Step   Entered       In       R**2        R**2        C(p)          F     Prob>F

  1    RECBB          1     0.4282      0.4282      8.6161    228.3966   0.0001
  2    RECEM1         2     0.0140      0.4422      3.0000      7.6161   0.0061
                              The SAS System                                680
                                          13:12 Tuesday, August 13, 1996

Model: MODEL1
Dependent Variable: RECATT

                           Analysis of Variance

                              Sum of         Mean
     Source          DF      Squares       Square      F Value       Prob>F

     Model            2    217.85494    108.92747      120.484       0.0001
     Error          304    274.84212      0.90409
     C Total        306    492.69707

        Root MSE       0.95083      R-square       0.4422
        Dep Mean       8.93485      Adj R-sq       0.4385
        C.V.          10.64186

                              The SAS System                                681
                                          13:12 Tuesday, August 13, 1996

                           Parameter Estimates

                     Parameter      Standard    T for H0:
   Variable  DF       Estimate         Error   Parameter=0    Prob > |T|

   INTERCEP   1       4.368917    0.43918317         9.948        0.0001
   RECBB      1       0.555089    0.04329846        12.820        0.0001
   RECEM1     1      -0.180426    0.06537810        -2.760        0.0061

                  Standardized
   Variable  DF       Estimate

   INTERCEP   1     0.00000000
   RECBB      1     0.60152632
   RECEM1     1    -0.12948812

                              The SAS System                                682
                                          13:12 Tuesday, August 13, 1996

         Forward Selection Procedure for Dependent Variable ENATT

Step 1   Variable ENBB Entered       R-square = 0.30975181   C(p) =  1.00876665

                 DF        Sum of Squares      Mean Square          F     Prob>F

Regression        1          154.39362228     154.39362228     136.87     0.0001
Error           305          344.04937446       1.12803074
Total           306          498.44299674

                Parameter          Standard          Type II
Variable         Estimate             Error   Sum of Squares          F     Prob>F

INTERCEP       4.18730435        0.38746469     131.74244741     116.79     0.0001
ENBB           0.51383087        0.04392037     154.39362228     136.87     0.0001

Bounds on condition number:            1,             1
                              The SAS System                                683
                                          13:12 Tuesday, August 13, 1996

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No other variable met the 0.5000 significance level for entry into the model.

   Summary of Forward Selection Procedure for Dependent Variable ENATT

       Variable    Number   Partial      Model
Step   Entered       In       R**2        R**2        C(p)          F     Prob>F

  1    ENBB           1     0.3098      0.3098      1.0088    136.8700   0.0001
                              The SAS System                                684
                                          13:12 Tuesday, August 13, 1996

Model: MODEL1
Dependent Variable: ENATT

                           Analysis of Variance
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                              Sum of         Mean
     Source          DF      Squares       Square      F Value       Prob>F

     Model            1    154.39362    154.39362      136.870       0.0001
     Error          305    344.04937      1.12803
     C Total        306    498.44300

        Root MSE       1.06209      R-square       0.3098
        Dep Mean       8.66450      Adj R-sq       0.3075
        C.V.          12.25793

                              The SAS System                                685
                                          13:12 Tuesday, August 13, 1996

                           Parameter Estimates

                     Parameter      Standard    T for H0:
   Variable  DF       Estimate         Error   Parameter=0    Prob > |T|

   INTERCEP   1       4.187304    0.38746469        10.807        0.0001
   ENBB       1       0.513831    0.04392037        11.699        0.0001

                  Standardized
   Variable  DF       Estimate

   INTERCEP   1     0.00000000
   ENBB       1     0.55655351

                              The SAS System                                686
                                          13:12 Tuesday, August 13, 1996

         Forward Selection Procedure for Dependent Variable CARATT

Step 1   Variable CARBB Entered      R-square = 0.16946699   C(p) =  7.64440999

                 DF        Sum of Squares      Mean Square          F     Prob>F

Regression        1          306.24286529     306.24286529      62.23     0.0001
Error           305         1500.85159725       4.92082491
Total           306         1807.09446254

                Parameter          Standard          Type II
Variable         Estimate             Error   Sum of Squares          F     Prob>F

INTERCEP       1.53497776        0.53173479      41.00642713       8.33     0.0042
CARBB          0.52486858        0.06653291     306.24286529      62.23     0.0001

Bounds on condition number:            1,             1
                              The SAS System                                687
                                          13:12 Tuesday, August 13, 1996

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Step 2   Variable CAREM1 Entered     R-square = 0.18723136   C(p) =  3.00000000

                 DF        Sum of Squares      Mean Square          F     Prob>F

Regression        2          338.34475743     169.17237872      35.02     0.0001
Error           304         1468.74970511       4.83141350
Total           306         1807.09446254

                Parameter          Standard          Type II
Variable         Estimate             Error   Sum of Squares          F     Prob>F

INTERCEP       2.47909066        0.64168116      72.11414474      14.93     0.0001
CARBB          0.48145483        0.06804305     241.88991284      50.07     0.0001
CAREM1        -0.30655872        0.11892837      32.10189214       6.64     0.0104

                              The SAS System                                688
                                          13:12 Tuesday, August 13, 1996

Bounds on condition number:     1.065266,      4.261065
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No other variable met the 0.5000 significance level for entry into the model.

   Summary of Forward Selection Procedure for Dependent Variable CARATT

       Variable    Number   Partial      Model
Step   Entered       In       R**2        R**2        C(p)          F     Prob>F

  1    CARBB          1     0.1695      0.1695      7.6444     62.2341   0.0001
  2    CAREM1         2     0.0178      0.1872      3.0000      6.6444   0.0104
                              The SAS System                                689
                                          13:12 Tuesday, August 13, 1996

Model: MODEL1
Dependent Variable: CARATT

                           Analysis of Variance
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                         Sum of         Mean
   Source           DF   Squares        Square       F Value      Prob>F

   Model             2    338.34476   169.17238       35.015      0.0001
   Error           304   1468.74971     4.83141
   C Total         306   1807.09446

      Root MSE       2.19805     R-square       0.1872
      Dep Mean       5.60912     Adj R-sq       0.1819
      C.V.          39.18703

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                       Parameter Estimates

                   Parameter      Standard    T for H0:
  Variable  DF      Estimate         Error   Parameter=0    Prob > |T|

  INTERCEP   1      2.479091    0.64168116         3.863        0.0001
  CARBB      1      0.481455    0.06804305         7.076        0.0001
  CAREM1     1     -0.306559    0.11892837        -2.578        0.0104

                Standardized
  Variable  DF      Estimate

  INTERCEP   1    0.00000000
  CARBB      1    0.37761352
  CAREM1     1   -0.13756374

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      Forward Selection Procedure for Dependent Variable RECSN

Step 1   Variable RECNB Entered     R-square = 0.25650244   C(p) =  2.00000000

              DF          Sum of Squares      Mean Square           F    Prob>F

Regression     1          230.25397087       230.25397087     105.22    0.0001
Error        305          667.41378158         2.18824191
Total        306          897.66775244

             Parameter          Standard          Type II
Variable      Estimate             Error   Sum of Squares           F    Prob>F

INTERCEP    3.24334627        0.34065041     198.36458751       90.65    0.0001
RECNB       0.55399397        0.05400689     230.25397087      105.22    0.0001

Bounds on condition number:            1,            1
                         The SAS System                         692
                                    13:12 Tuesday, August 13, 1996

------------------------------------------------------------------------------

No other variable met the 0.5000 significance level for entry into the model.

    Summary of Forward Selection Procedure for Dependent Variable RECSN

       Variable    Number    Partial      Model
Step   Entered         In       R**2       R**2          C(p)           F     Prob>F

  1    RECNB            1     0.2565     0.2565        2.0000    105.2233     0.0001
                         The SAS System                         693
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Model: MODEL1
Dependent Variable: RECSN

                       Analysis of Variance

                         Sum of         Mean
   Source           DF   Squares        Square       F Value      Prob>F

   Model             1    230.25397   230.25397      105.223      0.0001
   Error           305    667.41378     2.18824
   C Total         306    897.66775

      Root MSE       1.47927     R-square       0.2565
      Dep Mean       6.62866     Adj R-sq       0.2541
      C.V.          22.31627

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                                    13:12 Tuesday, August 13, 1996

                       Parameter Estimates

                   Parameter      Standard    T for H0:
  Variable  DF      Estimate         Error   Parameter=0    Prob > |T|

  INTERCEP   1      3.243346    0.34065041         9.521        0.0001
  RECNB      1      0.553994    0.05400689        10.258        0.0001

                Standardized
  Variable  DF      Estimate

  INTERCEP   1    0.00000000
  RECNB      1    0.50646070

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      Forward Selection Procedure for Dependent Variable ENSN

Step 1   Variable ENNB Entered      R-square = 0.30111230   C(p) =  2.00000000

              DF          Sum of Squares      Mean Square           F    Prob>F

Regression     1          270.37138322       270.37138322     131.41    0.0001
Error        305          627.53741156         2.05749971
Total        306          897.90879479

             Parameter          Standard          Type II
Variable      Estimate             Error   Sum of Squares           F    Prob>F

INTERCEP    3.00913037        0.33389692     167.10788903       81.22    0.0001
ENNB        0.61711646        0.05383400     270.37138322      131.41    0.0001

Bounds on condition number:            1,            1
                         The SAS System                         696
                                    13:12 Tuesday, August 13, 1996

------------------------------------------------------------------------------

No other variable met the 0.5000 significance level for entry into the model.

    Summary of Forward Selection Procedure for Dependent Variable ENSN

       Variable    Number    Partial      Model
Step   Entered         In       R**2       R**2          C(p)           F     Prob>F

  1    ENNB             1     0.3011     0.3011        2.0000    131.4077     0.0001
                         The SAS System                         697
                                    13:12 Tuesday, August 13, 1996

Model: MODEL1
Dependent Variable: ENSN

                       Analysis of Variance

                         Sum of         Mean
   Source           DF   Squares        Square       F Value      Prob>F

   Model             1    270.37138   270.37138      131.408      0.0001
   Error           305    627.53741     2.05750
   C Total         306    897.90879

      Root MSE       1.43440     R-square       0.3011
      Dep Mean       6.71987     Adj R-sq       0.2988
      C.V.          21.34563

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                       Parameter Estimates

                   Parameter      Standard    T for H0:
  Variable  DF      Estimate         Error   Parameter=0    Prob > |T|

  INTERCEP   1      3.009130    0.33389692         9.012        0.0001
  ENNB       1      0.617116    0.05383400        11.463        0.0001

                Standardized
  Variable  DF      Estimate

  INTERCEP   1    0.00000000
  ENNB       1    0.54873701

                         The SAS System                         699
                                    13:12 Tuesday, August 13, 1996

      Forward Selection Procedure for Dependent Variable CARSN

Step 1   Variable CARNB Entered     R-square = 0.32912932   C(p) =  2.00000000

              DF          Sum of Squares      Mean Square           F    Prob>F

Regression     1          296.85749296       296.85749296     149.63    0.0001
Error        305          605.09038977         1.98390292
```

Total	306	901.94788274			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	1.77244781	0.27684476	81.31950116	40.99	0.0001
CARNB	0.66059663	0.05400358	296.85749296	149.63	0.0001

Bounds on condition number: 1, 1

The SAS System 700
13:12 Tuesday, August 13, 1996

No other variable met the 0.5000 significance level for entry into the model.

Summary of Forward Selection Procedure for Dependent Variable CARSN

Step	Variable Entered	Number In	Partial R**2	Model R**2	C(p)	F	Prob>F
1	CARNB	1	0.3291	0.3291	2.0000	149.6331	0.0001

The SAS System 701
13:12 Tuesday, August 13, 1996

Model: MODEL1
Dependent Variable: CARSN

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	296.85749	296.85749	149.633	0.0001
Error	305	605.09039	1.98390		
C Total	306	901.94788			

Root MSE	1.40851	R-square	0.3291
Dep Mean	5.01303	Adj R-sq	0.3269
C.V.	28.09700		

The SAS System 702
13:12 Tuesday, August 13, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	1.772448	0.27684476	6.402	0.0001
CARNB	1	0.660597	0.05400358	12.232	0.0001

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
CARNB	1	0.57369793

The SAS System 703
13:12 Tuesday, August 13, 1996

Forward Selection Procedure for Dependent Variable RECBC

No variable met the 0.5000 significance level for entry into the model.

The SAS System 704
13:12 Tuesday, August 13, 1996

Model: MODEL1
Dependent Variable: RECBC

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	0	0.00000	.	.	.
Error	306	1274.93811	4.16646		
C Total	306	1274.93811			

Root MSE	2.04119	R-square	0.0000
Dep Mean	7.77850	Adj R-sq	0.0000
C.V.	26.24145		

The SAS System 705
13:12 Tuesday, August 13, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	7.778502	0.11649698	66.770	0.0001

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000

The SAS System 706
13:12 Tuesday, August 13, 1996

Forward Selection Procedure for Dependent Variable ENBC

Step 1 Variable ENRFC Entered R-square = 0.01247612 C(p) = 2.00000000

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	1	15.94569956	15.94569956	3.85	0.0506
Error	305	1262.15202031	4.13820335		
Total	306	1278.09771987			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	8.12752967	0.45344321	1329.48410371	321.27	0.0001
ENRFC	-0.12355080	0.06294043	15.94569956	3.85	0.0506

Bounds on condition number: 1, 1

The SAS System 707
13:12 Tuesday, August 13, 1996

No other variable met the 0.5000 significance level for entry into the model.

Summary of Forward Selection Procedure for Dependent Variable ENBC

Step	Variable Entered	Number In	Partial R**2	Model R**2	C(p)	F	Prob>F
1	ENRFC	1	0.0125	0.0125	2.0000	3.8533	0.0506

The SAS System 708
13:12 Tuesday, August 13, 1996

Model: MODEL1
Dependent Variable: ENBC

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	15.94570	15.94570	3.853	0.0506
Error	305	1262.15202	4.13820		
C Total	306	1278.09772			

Root MSE	2.03426	R-square	0.0125
Dep Mean	7.26710	Adj R-sq	0.0092
C.V.	27.99270		

The SAS System 709
13:12 Tuesday, August 13, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	8.127530	0.45344321	17.924	0.0001
ENRFC	1	-0.123551	0.06294043	-1.963	0.0506

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
ENRFC	1	-0.11169655

The SAS System 710
13:12 Tuesday, August 13, 1996

Forward Selection Procedure for Dependent Variable CARBC

Step 1 Variable CARRFC Entered R-square = 0.03861843 C(p) = 2.00000000

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	1	48.52059238	48.52059238	12.25	0.0005
Error	305	1207.88983107	3.96029453		
Total	306	1256.41042345			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	9.33279580	0.29466065	3972.89159956	1003.18	0.0001
CARRFC	-0.15361110	0.04388573	48.52059238	12.25	0.0005

Bounds on condition number: 1, 1

No other variable met the 0.5000 significance level for entry into the model.

Summary of Forward Selection Procedure for Dependent Variable CARBC

Step	Variable Entered	Number In	Partial R**2	Model R**2	C(p)	F	Prob>F
1	CARRFC	1	0.0386	0.0386	2.0000	12.2518	0.0005

Model: MODEL1
Dependent Variable: CARBC

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	48.52059	48.52059	12.252	0.0005
Error	305	1207.88983	3.96029		
C Total	306	1256.41042			

Root MSE	1.99005	R-square	0.0386
Dep Mean	8.38111	Adj R-sq	0.0355
C.V.	23.74446		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	9.332796	0.29466065	31.673	0.0001
CARRFC	1	-0.153611	0.04388573	-3.500	0.0005

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
CARRFC	1	-0.19651571

Forward Selection Procedure for Dependent Variable RECBB

Step 1 Variable RECAP1 Entered R-square = 0.00843071 C(p) = 2.00000000

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	1	4.87783903	4.87783903	2.59	0.1084
Error	305	573.70196553	1.88099005		
Total	306	578.57980456			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	8.28221161	0.31209465	1324.66635302	704.24	0.0001
RECAP1	0.12954123	0.08044286	4.87783903	2.59	0.1084

Bounds on condition number: 1, 1

No other variable met the 0.5000 significance level for entry into the model.

Summary of Forward Selection Procedure for Dependent Variable RECBB

Step	Variable Entered	Number In	Partial R**2	Model R**2	C(p)	F	Prob>F
1	RECAP1	1	0.0084	0.0084	2.0000	2.5932	0.1084

Model: MODEL1
Dependent Variable: RECBB

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	4.87784	4.87784	2.593	0.1084
Error	305	573.70197	1.88099		
C Total	306	578.57980			

Root MSE	1.37149	R-square	0.0084
Dep Mean	8.76873	Adj R-sq	0.0052
C.V.	15.64071		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	8.282212	0.31209465	26.537	0.0001
RECAP1	1	0.129541	0.08044286	1.610	0.1084

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
RECAP1	1	0.09181890

Forward Selection Procedure for Dependent Variable ENBB

No variable met the 0.5000 significance level for entry into the model.

Model: MODEL1
Dependent Variable: ENBB

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	0	0.00000	.	.	.
Error	306	584.77524	1.91103		
C Total	306	584.77524			

Root MSE	1.38240	R-square	0.0000
Dep Mean	8.71336	Adj R-sq	0.0000
C.V.	15.86530		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	8.713355	0.07889774	110.439	0.0001

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000

Forward Selection Procedure for Dependent Variable CARBB

No variable met the 0.5000 significance level for entry into the model.

Model: MODEL1
Dependent Variable: CARBB

Analysis of Variance

Sum of Mean

Source	DF	Squares	Square	F Value	Prob>F
Model	0	0.00000	.	.	.
Error	306	1111.64169	3.63282		
C Total	306	1111.64169			

Root MSE	1.90599	R-square	0.0000
Dep Mean	7.76221	Adj R-sq	0.0000
C.V.	24.55478		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	7.762215	0.10878087	71.356	0.0001

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000

Forward Selection Procedure for Dependent Variable RECNB

Step 1 Variable RECOC Entered R-square = 0.18446675 C(p) = 2.00000000

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	1	138.39332386	138.39332386	68.99	0.0001
Error	305	611.84120382	2.00603673		
Total	306	750.23452769			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	3.68494970	0.30303676	296.62747612	147.87	0.0001
RECOC	0.24957119	0.03004736	138.39332386	68.99	0.0001

Bounds on condition number: 1, 1

No other variable met the 0.5000 significance level for entry into the model.

Summary of Forward Selection Procedure for Dependent Variable RECNB

Step	Variable Entered	Number In	Partial R**2	Model R**2	C(p)	F	Prob>F
1	RECOC	1	0.1845	0.1845	2.0000	68.9884	0.0001

Model: MODEL1
Dependent Variable: RECNB

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	138.39332	138.39332	68.988	0.0001
Error	305	611.84120	2.00604		
C Total	306	750.23453			

Root MSE	1.41635	R-square	0.1845
Dep Mean	6.11075	Adj R-sq	0.1818
C.V.	23.17795		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	3.684950	0.30303676	12.160	0.0001
RECOC	1	0.249571	0.03004736	8.306	0.0001

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
RECOC	1	0.42949592

Forward Selection Procedure for Dependent Variable ENNB

Step 1 Variable ENOC Entered R-square = 0.13485823 C(p) = 2.00000000

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	1	95.74231339	95.74231339	47.54	0.0001
Error	305	614.20556935	2.01378875		
Total	306	709.94788274			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	4.09176983	0.29017055	400.43278528	198.85	0.0001
ENOC	0.20768544	0.03012042	95.74231339	47.54	0.0001

Bounds on condition number: 1, 1

No other variable met the 0.5000 significance level for entry into the model.

Summary of Forward Selection Procedure for Dependent Variable ENNB

Step	Variable Entered	Number In	Partial R**2	Model R**2	C(p)	F	Prob>F
1	ENOC	1	0.1349	0.1349	2.0000	47.5434	0.0001

Model: MODEL1
Dependent Variable: ENNB

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	95.74231	95.74231	47.543	0.0001
Error	305	614.20557	2.01379		
C Total	306	709.94788			

Root MSE	1.41908	R-square	0.1349
Dep Mean	6.01303	Adj R-sq	0.1320
C.V.	23.60009		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	4.091770	0.29017055	14.101	0.0001
ENOC	1	0.207685	0.03012042	6.895	0.0001

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
ENOC	1	0.36723048

Forward Selection Procedure for Dependent Variable CARNB

Step 1 Variable CAROC Entered R-square = 0.08300727 C(p) = 2.00000000

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	1	56.46657325	56.46657325	27.61	0.0001
Error	305	623.79401307	2.04522627		
Total	306	680.26058632			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	3.78631576	0.22810825	563.49885021	275.52	0.0001

CAROC	0.15900095	0.03026040	56.46657325	27.61	0.0001

Bounds on condition number: 1, 1

The SAS System 733
13:12 Tuesday, August 13, 1996

No other variable met the 0.5000 significance level for entry into the model.

Summary of Forward Selection Procedure for Dependent Variable CARNB

Step	Variable Entered	Number In	Partial R**2	Model R**2	C(p)	F	Prob>F
1	CAROC	1	0.0830	0.0830	2.0000	27.6090	0.0001

The SAS System 734
13:12 Tuesday, August 13, 1996

Model: MODEL1
Dependent Variable: CARNB

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	56.46657	56.46657	27.609	0.0001
Error	305	623.79401	2.04523		
C Total	306	680.26059			

Root MSE	1.43011	R-square	0.0830
Dep Mean	4.90554	Adj R-sq	0.0800
C.V.	29.15306		

The SAS System 735
13:12 Tuesday, August 13, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	3.786316	0.22810825	16.599	0.0001
CAROC	1	0.159001	0.03026040	5.254	0.0001

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
CAROC	1	0.28810982

Regression (Step-Wise #1)

The SAS System 105
15:36 Friday, August 16, 1996

Model: MODEL1
Dependent Variable: RECBEH1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	162.54785	162.54785	430.121	0.0001
Error	305	115.26322	0.37791		
C Total	306	277.81107			

Root MSE	0.61475	R-square	0.5851
Dep Mean	3.78502	Adj R-sq	0.5837
C.V.	16.24156		

The SAS System 106
15:36 Friday, August 16, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	0.538878	0.16040487	3.359	0.0009
RECINT1	1	0.795343	0.03834945	20.739	0.0001

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
RECINT1	1	0.76491969

The SAS System 107
15:36 Friday, August 16, 1996

Model: MODEL1
Dependent Variable: ENBEH1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	110.62185	110.62185	304.568	0.0001
Error	305	110.77880	0.36321		
C Total	306	221.40065			

Root MSE	0.60267	R-square	0.4996
Dep Mean	3.65472	Adj R-sq	0.4980
C.V.	16.49012		

The SAS System 108
15:36 Friday, August 16, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	1.039985	0.15372316	6.765	0.0001
ENINT1	1	0.666161	0.03817134	17.452	0.0001

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
ENINT1	1	0.70685611

The SAS System 109
15:36 Friday, August 16, 1996

Model: MODEL1
Dependent Variable: CARBEH1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	134.12864	134.12864	407.519	0.0001
Error	305	100.38602	0.32913		
C Total	306	234.51466			

Root MSE	0.57370	R-square	0.5719
Dep Mean	1.47231	Adj R-sq	0.5705
C.V.	38.96607		

The SAS System 110
15:36 Friday, August 16, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	0.391120	0.06277436	6.231	0.0001
CARINT1	1	0.621585	0.03079117	20.187	0.0001

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
CARINT1	1	0.75626808

The SAS System 111
15:36 Friday, August 16, 1996

Model: MODEL1
Dependent Variable: RECINT1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	3	94.82686	31.60895	59.070	0.0001
Error	303	162.13731	0.53511		
C Total	306	256.96417			

Root MSE	0.73151	R-square	0.3690
Dep Mean	4.08143	Adj R-sq	0.3628
C.V.	17.92287		

The SAS System 112
15:36 Friday, August 16, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	-0.249347	0.32888048	-0.758	0.4489
RECATT	1	0.351072	0.03485066	10.074	0.0001
RECSN	1	0.085569	0.02508740	3.411	0.0007
RECBC	1	0.080581	0.02113354	3.813	0.0002

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
RECATT	1	0.48612673
RECSN	1	0.15993359
RECBC	1	0.17948929

The SAS System 113
15:36 Friday, August 16, 1996

Model: MODEL1
Dependent Variable: ENINT1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	3	71.86876	23.95625	40.916	0.0001
Error	303	177.40811	0.58551		
C Total	306	249.27687			

Root MSE	0.76518	R-square	0.2883
Dep Mean	3.92508	Adj R-sq	0.2813
C.V.	19.49471		

The SAS System 114
15:36 Friday, August 16, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	0.517057	0.34640154	1.493	0.1366
ENATT	1	0.332295	0.03584819	9.270	0.0001
ENSN	1	0.087252	0.02676807	3.260	0.0012
ENBC	1	-0.007908	0.02176198	-0.363	0.7166

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
ENATT	1	0.46988445
ENSN	1	0.16559586
ENBC	1	-0.01790631

The SAS System 115
15:36 Friday, August 16, 1996

Model: MODEL1
Dependent Variable: CARINT1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	3	76.93746	25.64582	28.757	0.0001
Error	303	270.21563	0.89180		
C Total	306	347.15309			

Root MSE	0.94435	R-square	0.2216
Dep Mean	1.73941	Adj R-sq	0.2139
C.V.	54.29140		

The SAS System 116
15:36 Friday, August 16, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	0.754411	0.33555982	2.248	0.0253
CARATT	1	0.187945	0.02461057	7.637	0.0001
CARSN	1	0.033991	0.03464014	0.981	0.3273
CARBC	1	-0.028588	0.02782646	-1.027	0.3051

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
CARATT	1	0.42880628
CARSN	1	0.05478840
CARBC	1	-0.05438652

The SAS System 117
15:36 Friday, August 16, 1996

Model: MODEL1
Dependent Variable: RECATT

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	2	217.85494	108.92747	120.484	0.0001
Error	304	274.84212	0.90409		
C Total	306	492.69707			

Root MSE	0.95083	R-square	0.4422
Dep Mean	8.93485	Adj R-sq	0.4385
C.V.	10.64186		

The SAS System 118
15:36 Friday, August 16, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	4.368917	0.43918317	9.948	0.0001
RECBB	1	0.555089	0.04329846	12.820	0.0001
RECEM1	1	-0.180426	0.06537810	-2.760	0.0061

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
RECBB	1	0.60152632
RECEM1	1	-0.12948812

The SAS System 119
15:36 Friday, August 16, 1996

Model: MODEL1
Dependent Variable: ENATT

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	2	154.40354	77.20177	68.217	0.0001
Error	304	344.03945	1.13171		
C Total	306	498.44300			

Root MSE	1.06382	R-square	0.3098
Dep Mean	8.66450	Adj R-sq	0.3052
C.V.	12.27790		

The SAS System 120
15:36 Friday, August 16, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|

INTERCEP	1	4.162548	0.46960532	8.864	0.0001
ENBB	1	0.515347	0.04687750	10.993	0.0001
ENEM1	1	0.007047	0.07526166	0.094	0.9255

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
ENBB	1	0.55819573
ENEM1	1	0.00475410

Model: MODEL1
Dependent Variable: CARATT

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	2	338.34476	169.17238	35.015	0.0001
Error	304	1468.74971	4.83141		
C Total	306	1807.09446			

Root MSE	2.19805	R-square	0.1872
Dep Mean	5.60912	Adj R-sq	0.1819
C.V.	39.18703		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	2.479091	0.64168116	3.863	0.0001
CARBB	1	0.481455	0.06804305	7.076	0.0001
CAREM1	1	-0.306559	0.11892837	-2.578	0.0104

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
CARBB	1	0.37761352
CAREM1	1	-0.13756374

Model: MODEL1
Dependent Variable: RECSN

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	230.25397	230.25397	105.223	0.0001
Error	305	667.41378	2.18824		
C Total	306	897.66775			

Root MSE	1.47927	R-square	0.2565
Dep Mean	6.62866	Adj R-sq	0.2541
C.V.	22.31627		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	3.243346	0.34065041	9.521	0.0001
RECNB	1	0.553994	0.05400689	10.258	0.0001

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
RECNB	1	0.50646070

Model: MODEL1
Dependent Variable: ENSN

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	270.37138	270.37138	131.408	0.0001
Error	305	627.53741	2.05750		
C Total	306	897.90879			

Root MSE	1.43440	R-square	0.3011
Dep Mean	6.71987	Adj R-sq	0.2988
C.V.	21.34563		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	3.009130	0.33389692	9.012	0.0001
ENNB	1	0.617116	0.05383400	11.463	0.0001

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
ENNB	1	0.54873701

Model: MODEL1
Dependent Variable: CARSN

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	296.85749	296.85749	149.633	0.0001
Error	305	605.09039	1.98390		
C Total	306	901.94788			

Root MSE	1.40851	R-square	0.3291
Dep Mean	5.01303	Adj R-sq	0.3269
C.V.	28.09700		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	1.772448	0.27684476	6.402	0.0001
CARNB	1	0.660597	0.05400358	12.232	0.0001

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
CARNB	1	0.57369793

Model: MODEL1
Dependent Variable: RECBC

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	0.29148	0.29148	0.070	0.7919
Error	305	1274.64663	4.17917		
C Total	306	1274.93811			

Root MSE	2.04430	R-square	0.0002
Dep Mean	7.77850	Adj R-sq	-0.0030
C.V.	26.28143		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	7.642224	0.52904493	14.445	0.0001
RECRFC	1	0.017987	0.06810741	0.264	0.7919

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
RECRFC	1	0.01512027

The SAS System 131
15:36 Friday, August 16, 1996

Model: MODEL1
Dependent Variable: ENBC

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	15.94570	15.94570	3.853	0.0506
Error	305	1262.15202	4.13820		
C Total	306	1278.09772			

Root MSE	2.03426	R-square	0.0125
Dep Mean	7.26710	Adj R-sq	0.0092
C.V.	27.99270		

The SAS System 132
15:36 Friday, August 16, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	8.127530	0.45344321	17.924	0.0001
ENRFC	1	-0.123551	0.06294043	-1.963	0.0506

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
ENRFC	1	-0.11169655

The SAS System 133
15:36 Friday, August 16, 1996

Model: MODEL1
Dependent Variable: CARBC

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	48.52059	48.52059	12.252	0.0005
Error	305	1207.88983	3.96029		
C Total	306	1256.41042			

Root MSE	1.99005	R-square	0.0386
Dep Mean	8.38111	Adj R-sq	0.0355
C.V.	23.74446		

The SAS System 134
15:36 Friday, August 16, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	9.332796	0.29466065	31.673	0.0001
CARRFC	1	-0.153611	0.04388573	-3.500	0.0005

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
CARRFC	1	-0.19651571

The SAS System 135
15:36 Friday, August 16, 1996

Model: MODEL1
Dependent Variable: RECBB

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	4.87784	4.87784	2.593	0.1084
Error	305	573.70197	1.88099		
C Total	306	578.57980			

Root MSE	1.37149	R-square	0.0084
Dep Mean	8.76873	Adj R-sq	0.0052
C.V.	15.64071		

The SAS System 136
15:36 Friday, August 16, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	8.282212	0.31209465	26.537	0.0001
RECAP1	1	0.129541	0.08044286	1.610	0.1084

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
RECAP1	1	0.09181890

The SAS System 137
15:36 Friday, August 16, 1996

Model: MODEL1
Dependent Variable: ENBB

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	0.74026	0.74026	0.387	0.5346
Error	305	584.03498	1.91487		
C Total	306	584.77524			

Root MSE	1.38379	R-square	0.0013
Dep Mean	8.71336	Adj R-sq	-0.0020
C.V.	15.88123		

The SAS System 138
15:36 Friday, August 16, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	8.536858	0.29464866	28.973	0.0001
ENAP1	1	0.050830	0.08175157	0.622	0.5346

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
ENAP1	1	0.03557938

The SAS System 139
15:36 Friday, August 16, 1996

Model: MODEL1
Dependent Variable: CARBB

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	0.00442	0.00442	0.001	0.9722
Error	305	1111.63727	3.64471		
C Total	306	1111.64169			

Root MSE	1.90911	R-square	0.0000
Dep Mean	7.76221	Adj R-sq	-0.0033
C.V.	24.59495		

The SAS System 140
15:36 Friday, August 16, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	7.753615	0.26993319	28.724	0.0001
CARAP1	1	0.004074	0.11700366	0.035	0.9722

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
CARAP1	1	0.00199384

The SAS System 141
15:36 Friday, August 16, 1996

Model: MODEL1
Dependent Variable: RECNB

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	138.39332	138.39332	68.988	0.0001
Error	305	611.84120	2.00604		
C Total	306	750.23453			

Root MSE	1.41635	R-square	0.1845
Dep Mean	6.11075	Adj R-sq	0.1818
C.V.	23.17795		

The SAS System 142
15:36 Friday, August 16, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	3.684950	0.30303676	12.160	0.0001
RECOC	1	0.249571	0.03004736	8.306	0.0001

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
RECOC	1	0.42949592

The SAS System 143
15:36 Friday, August 16, 1996

Model: MODEL1
Dependent Variable: ENNB

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	95.74231	95.74231	47.543	0.0001
Error	305	614.20557	2.01379		
C Total	306	709.94788			

Root MSE	1.41908	R-square	0.1349
Dep Mean	6.01303	Adj R-sq	0.1320
C.V.	23.60009		

The SAS System 144
15:36 Friday, August 16, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	4.091770	0.29017055	14.101	0.0001
ENOC	1	0.207685	0.03012042	6.895	0.0001

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
ENOC	1	0.36723048

The SAS System 145
15:36 Friday, August 16, 1996

Model: MODEL1
Dependent Variable: CARNB

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	56.46657	56.46657	27.609	0.0001
Error	305	623.79401	2.04523		
C Total	306	680.26059			

Root MSE	1.43011	R-square	0.0830
Dep Mean	4.90554	Adj R-sq	0.0800
C.V.	29.15306		

The SAS System 146
15:36 Friday, August 16, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	3.786316	0.22810825	16.599	0.0001
CAROC	1	0.159001	0.03026040	5.254	0.0001

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
CAROC	1	0.28810982

Regression (Step-Wise #2)

The SAS System 1
13:29 Saturday, August 17, 1996

Model: MODEL1
Dependent Variable: RECBEH1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	10	175.43231	17.54323	50.721	0.0001
Error	296	102.37876	0.34587		
C Total	306	277.81107			

Root MSE	0.58811	R-square	0.6315
Dep Mean	3.78502	Adj R-sq	0.6190
C.V.	15.53786		

The SAS System 2
13:29 Saturday, August 17, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	-0.232674	0.36075221	-0.645	0.5194
RECINT1	1	0.703203	0.04772056	14.736	0.0001
RECATT	1	0.007045	0.03996419	0.176	0.8602
RECSN	1	0.038499	0.02411154	1.597	0.1114
RECBC	1	0.031401	0.01752386	1.792	0.0742
RECBB	1	0.018668	0.03351864	0.557	0.5780
RECNB	1	-0.011652	0.02638024	-0.442	0.6590
RECEM1	1	0.009635	0.04123650	0.234	0.8154
RECAP1	1	0.046948	0.04418543	1.063	0.2889
RECOC	1	0.051592	0.01631716	3.162	0.0017
RECRFC	1	-0.026552	0.01993052	-1.332	0.1838

The SAS System 3
13:29 Saturday, August 17, 1996

Standardized

Variable	DF	Estimate
INTERCEP	1	0.00000000
RECINT1	1	0.67630463
RECATT	1	0.00938226
RECSN	1	0.06920439
RECBC	1	0.06726951
RECBB	1	0.02694015
RECNB	1	-0.01914763
RECEM1	1	0.00920833
RECAP1	1	0.04802285
RECOC	1	0.14590536
RECRFC	1	-0.04781542

The SAS System 4
13:29 Saturday, August 17, 1996

Model: MODEL1
Dependent Variable: ENBEH1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	10	125.62164	12.56216	38.823	0.0001
Error	296	95.77902	0.32358		
C Total	306	221.40065			

Root MSE	0.56884	R-square	0.5674
Dep Mean	3.65472	Adj R-sq	0.5528
C.V.	15.56449		

The SAS System 5
13:29 Saturday, August 17, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	-0.432370	0.34869217	-1.240	0.2160
ENINT1	1	0.577771	0.04395590	13.144	0.0001
ENATT	1	0.005050	0.03469045	0.146	0.8844
ENSN	1	0.012734	0.02411861	0.528	0.5979
ENBC	1	0.021966	0.01644223	1.336	0.1826
ENBB	1	0.108057	0.03008401	3.592	0.0004
ENNB	1	0.000411	0.02681967	0.015	0.9878
ENEM1	1	0.128352	0.04130512	3.107	0.0021
ENAP1	1	0.075697	0.04119618	1.837	0.0671
ENOC	1	0.030786	0.01530030	2.012	0.0451
ENRFC	1	-0.024642	0.01791632	-1.375	0.1701

The SAS System 6
13:29 Saturday, August 17, 1996

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
ENINT1	1	0.61306641
ENATT	1	0.00757762
ENSN	1	0.02564411
ENBC	1	0.05277685
ENBB	1	0.17561373
ENNB	1	0.00073636
ENEM1	1	0.12992691
ENAP1	1	0.08611135
ENOC	1	0.09747821
ENRFC	1	-0.05352538

The SAS System 7
13:29 Saturday, August 17, 1996

Model: MODEL1
Dependent Variable: CARBEH1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	10	136.98818	13.69882	41.577	0.0001
Error	296	97.52648	0.32948		
C Total	306	234.51466			

Root MSE	0.57400	R-square	0.5841
Dep Mean	1.47231	Adj R-sq	0.5701
C.V.	38.98660		

The SAS System 8
13:29 Saturday, August 17, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	-0.108330	0.26042827	-0.416	0.6777
CARINT1	1	0.593986	0.03514923	16.899	0.0001
CARATT	1	0.028097	0.01851948	1.517	0.1303
CARSN	1	0.031472	0.02488148	1.265	0.2069
CARBC	1	0.025230	0.01712978	1.473	0.1419
CARBB	1	-0.002552	0.01979016	-0.129	0.8975
CARNB	1	-0.020231	0.02876174	-0.703	0.4824
CAREM1	1	0.009667	0.03281009	0.295	0.7685
CARAP1	1	-0.003558	0.04253659	-0.084	0.9334
CAROC	1	0.015233	0.01492385	1.021	0.3082
CARRFC	1	0.003360	0.01421418	0.236	0.8133

The SAS System 9
13:29 Saturday, August 17, 1996

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
CARINT1	1	0.72268951
CARATT	1	0.07799560
CARSN	1	0.06171996
CARBC	1	0.05839726
CARBB	1	-0.00555629
CARNB	1	-0.03445564
CAREM1	1	0.01204229
CARAP1	1	-0.00379091
CAROC	1	0.04701146
CARRFC	1	0.00995066

The SAS System 10
13:29 Saturday, August 17, 1996

Model: MODEL1
Dependent Variable: RECINT1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	9	105.08191	11.67577	22.832	0.0001
Error	297	151.88226	0.51139		
C Total	306	256.96417			

Root MSE	0.71511	R-square	0.4089
Dep Mean	4.08143	Adj R-sq	0.3910
C.V.	17.52115		

The SAS System 11
13:29 Saturday, August 17, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	-0.382831	0.43809432	-0.874	0.3829
RECATT	1	0.339657	0.04441829	7.647	0.0001
RECSN	1	0.052555	0.02915943	1.802	0.0725
RECBC	1	0.068016	0.02093947	3.248	0.0013
RECBB	1	0.018378	0.04074309	0.451	0.6523
RECNB	1	0.002845	0.03207666	0.089	0.9294
RECEM1	1	0.013068	0.05013584	0.261	0.7945
RECAP1	1	0.198289	0.05248086	3.778	0.0002
RECOC	1	-0.010058	0.01983229	-0.507	0.6124
RECRFC	1	-0.038973	0.02412881	-1.615	0.1073

The SAS System 12
13:29 Saturday, August 17, 1996

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
RECATT	1	0.47032122
RECSN	1	0.09822791
RECBC	1	0.15150245
RECBB	1	0.02757715
RECNB	1	0.00486152
RECEM1	1	0.01298678
RECAP1	1	0.21089539
RECOC	1	-0.02957681
RECRFC	1	-0.07297540

The SAS System 13
13:29 Saturday, August 17, 1996

Model: MODEL1
Dependent Variable: ENINT1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	9	81.80407	9.08934	16.119	0.0001
Error	297	167.47280	0.56388		
C Total	306	249.27687			

Root MSE	0.75092	R-square	0.3282
Dep Mean	3.92508	Adj R-sq	0.3078
C.V.	19.13133		

The SAS System 14
13:29 Saturday, August 17, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	0.515619	0.45933278	1.123	0.2625
ENATT	1	0.320073	0.04185940	7.646	0.0001
ENSN	1	0.050746	0.03170236	1.601	0.1105
ENBC	1	-0.005699	0.02170276	-0.263	0.7930
ENBB	1	0.006469	0.03971192	0.163	0.8707
ENNB	1	0.007237	0.03540197	0.204	0.8382
ENEM1	1	-0.055484	0.05443148	-1.019	0.3089
ENAP1	1	0.140769	0.05376587	2.618	0.0093
ENOC	1	0.015167	0.02017863	0.752	0.4529
ENRFC	1	-0.043289	0.02351745	-1.841	0.0667

The SAS System 15
13:29 Saturday, August 17, 1996

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
ENATT	1	0.45260116
ENSN	1	0.09631029
ENBC	1	-0.01290445
ENBB	1	0.00990766
ENNB	1	0.01221391
ENEM1	1	-0.05293090
ENAP1	1	0.15091713
ENOC	1	0.04525922
ENRFC	1	-0.08861649

The SAS System 16
13:29 Saturday, August 17, 1996

Model: MODEL1
Dependent Variable: CARINT1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	9	80.46764	8.94085	9.957	0.0001
Error	297	266.68546	0.89793		
C Total	306	347.15309			

Root MSE	0.94759	R-square	0.2318
Dep Mean	1.73941	Adj R-sq	0.2085
C.V.	54.47767		

The SAS System 17
13:29 Saturday, August 17, 1996

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	0.801841	0.42740136	1.876	0.0616
CARATT	1	0.194845	0.02840539	6.859	0.0001
CARSN	1	0.053264	0.04095900	1.300	0.1945
CARBC	1	-0.034367	0.02820820	-1.218	0.2241
CARBB	1	0.032808	0.03261495	1.006	0.3153
CARNB	1	-0.033442	0.04744148	-0.705	0.4814
CAREM1	1	0.030597	0.05413523	0.565	0.5724
CARAP1	1	0.003287	0.07022102	0.047	0.9627
CAROC	1	-0.013212	0.02462501	-0.537	0.5920
CARRFC	1	-0.032195	0.02339091	-1.376	0.1697

The SAS System 18
13:29 Saturday, August 17, 1996

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
CARATT	1	0.44454952
CARSN	1	0.08585495
CARBC	1	-0.06538074
CARBB	1	0.05870896
CARNB	1	-0.04681326
CAREM1	1	0.03132601
CARAP1	1	0.00287841
CAROC	1	-0.03351343
CARRFC	1	-0.07835538

T-Test

The SAS System 451
13:12 Tuesday, August 13, 1996

TTEST PROCEDURE

Variable: RECINT1

SEX	N	Mean	Std Dev	Std Error	Minimum	Maximum
1	261	4.07662835	0.90398143	0.05595505	1.00000000	5.00000000
2	46	4.10869565	0.99394301	0.14654890	1.00000000	5.00000000

Variances	T	DF	Prob>|T|
Unequal	-0.2044	58.9	0.8387
Equal	-0.2185	305.0	0.8272

For H0: Variances are equal, F' = 1.21 DF = (45,260) Prob>F' = 0.3674

The SAS System 452
13:12 Tuesday, August 13, 1996

TTEST PROCEDURE

Variable: ENINT1

SEX	N	Mean	Std Dev	Std Error	Minimum	Maximum
1	261	3.92337165	0.87808234	0.05435193	1.00000000	7.00000000
2	46	3.93478261	1.04141301	0.15354797	1.00000000	5.00000000

Variances	T	DF	Prob>|T|
Unequal	-0.0701	56.8	0.9444
Equal	-0.0789	305.0	0.9371

For H0: Variances are equal, F' = 1.41 DF = (45,260) Prob>F' = 0.1086

The SAS System 453
13:12 Tuesday, August 13, 1996

TTEST PROCEDURE

Variable: CARINT1

SEX	N	Mean	Std Dev	Std Error	Minimum	Maximum
1	261	1.67432950	1.00636056	0.06229215	1.00000000	5.00000000
2	46	2.10869565	1.30346991	0.19218615	1.00000000	5.00000000

Variances	T	DF	Prob>|T|
Unequal	-2.1500	54.8	0.0360
Equal	-2.5736	305.0	0.0105

For H0: Variances are equal, F' = 1.68 DF = (45,260) Prob>F' = 0.0142

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                              The SAS System                         454
                                          13:12 Tuesday, August 13, 1996

                             TTEST PROCEDURE

Variable: RECBEH1

SEX       N          Mean       Std Dev     Std Error       Minimum       Maximum
-----------------------------------------------------------------------------------
 1      261    3.81226054    0.89399872    0.05533713    1.00000000    5.00000000
 2       46    3.63043478    1.23573992    0.18219991    1.00000000    5.00000000

Variances        T       DF     Prob>|T|
---------------------------------------
Unequal     0.9549     53.6       0.3439
Equal       1.1942    305.0       0.2333

For H0: Variances are equal, F' = 1.91    DF = (45,260)    Prob>F' = 0.0019
                              The SAS System                         455
                                          13:12 Tuesday, August 13, 1996

                             TTEST PROCEDURE

Variable: ENBEH1

SEX       N          Mean       Std Dev     Std Error       Minimum       Maximum
-----------------------------------------------------------------------------------
 1      261    3.67049808    0.83127066    0.05145436    1.00000000    5.00000000
 2       46    3.56521739    0.95805762    0.14125789    1.00000000    5.00000000

Variances        T       DF     Prob>|T|
---------------------------------------
Unequal     0.7003     57.6       0.4866
Equal       0.7735    305.0       0.4398

For H0: Variances are equal, F' = 1.33    DF = (45,260)    Prob>F' = 0.1816
                              The SAS System                         456
                                          13:12 Tuesday, August 13, 1996

                             TTEST PROCEDURE

Variable: CARBEH1

SEX       N          Mean       Std Dev     Std Error       Minimum       Maximum
-----------------------------------------------------------------------------------
 1      261    1.40613027    0.75689190    0.04685043    1.00000000    5.00000000
 2       46    1.84782609    1.31601066    0.19403519    1.00000000    5.00000000

Variances        T       DF     Prob>|T|
---------------------------------------
Unequal    -2.2128     50.4       0.0315
Equal      -3.2026    305.0       0.0015

For H0: Variances are equal, F' = 3.02    DF = (45,260)    Prob>F' = 0.0000
                              The SAS System                         457
                                          13:12 Tuesday, August 13, 1996

                             TTEST PROCEDURE

Variable: ENINT1

SEX       N          Mean       Std Dev     Std Error       Minimum       Maximum
-----------------------------------------------------------------------------------
 1      261    3.92337165    0.87808234    0.05435193    1.00000000    7.00000000
 2       46    3.93478261    1.04141301    0.15354797    1.00000000    5.00000000

Variances        T       DF     Prob>|T|
---------------------------------------
Unequal    -0.0701     56.8       0.9444
Equal      -0.0789    305.0       0.9371

For H0: Variances are equal, F' = 1.41    DF = (45,260)    Prob>F' = 0.1086
                              The SAS System                         458
                                          13:12 Tuesday, August 13, 1996

                             TTEST PROCEDURE

Variable: CARINT1

SEX       N          Mean       Std Dev     Std Error       Minimum       Maximum
-----------------------------------------------------------------------------------
 1      261    1.67432950    1.00636056    0.06229215    1.00000000    5.00000000
 2       46    2.10869565    1.30346991    0.19218615    1.00000000    5.00000000

Variances        T       DF     Prob>|T|
---------------------------------------
Unequal    -2.1500     54.8       0.0360
Equal      -2.5736    305.0       0.0105

For H0: Variances are equal, F' = 1.68    DF = (45,260)    Prob>F' = 0.0142
```

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                              The SAS System                         459
                                          13:12 Tuesday, August 13, 1996

                             TTEST PROCEDURE

Variable: RECBEH1

SEX       N          Mean       Std Dev     Std Error       Minimum       Maximum
-----------------------------------------------------------------------------------
 1      261    3.81226054    0.89399872    0.05533713    1.00000000    5.00000000
 2       46    3.63043478    1.23573992    0.18219991    1.00000000    5.00000000

Variances        T       DF     Prob>|T|
---------------------------------------
Unequal     0.9549     53.6       0.3439
Equal       1.1942    305.0       0.2333

For H0: Variances are equal, F' = 1.91    DF = (45,260)    Prob>F' = 0.0019
                              The SAS System                         460
                                          13:12 Tuesday, August 13, 1996

                             TTEST PROCEDURE

Variable: ENBEH1

SEX       N          Mean       Std Dev     Std Error       Minimum       Maximum
-----------------------------------------------------------------------------------
 1      261    3.67049808    0.83127066    0.05145436    1.00000000    5.00000000
 2       46    3.56521739    0.95805762    0.14125789    1.00000000    5.00000000

Variances        T       DF     Prob>|T|
---------------------------------------
Unequal     0.7003     57.6       0.4866
Equal       0.7735    305.0       0.4398

For H0: Variances are equal, F' = 1.33    DF = (45,260)    Prob>F' = 0.1816
                              The SAS System                         461
                                          13:12 Tuesday, August 13, 1996

                             TTEST PROCEDURE

Variable: CARBEH1

SEX       N          Mean       Std Dev     Std Error       Minimum       Maximum
-----------------------------------------------------------------------------------
 1      261    1.40613027    0.75689190    0.04685043    1.00000000    5.00000000
 2       46    1.84782609    1.31601066    0.19403519    1.00000000    5.00000000

Variances        T       DF     Prob>|T|
---------------------------------------
Unequal    -2.2128     50.4       0.0315
Equal      -3.2026    305.0       0.0015

For H0: Variances are equal, F' = 3.02    DF = (45,260)    Prob>F' = 0.0000
```

Analysis of Variance (ANOVA)

The SAS System 1
16:10 Friday, August 23, 1996

General Linear Models Procedure
Class Level Information

Class	Levels	Values
EDUC	6	1 2 3 4 5 6

Number of observations in data set = 307

The SAS System 2
16:10 Friday, August 23, 1996

General Linear Models Procedure

Dependent Variable: RECBEH1

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	2.82613620	0.56522724	0.62	0.6856
Error	301	274.98493872	0.91357122		
Corrected Total	306	277.81107492			

R-Square	C.V.	Root MSE	RECBEH1 Mean
0.010173	25.25245	0.955809	3.785016

The SAS System 3
16:10 Friday, August 23, 1996

General Linear Models Procedure

Dependent Variable: RECBEH1

Source	DF	Type I SS	Mean Square	F Value	Pr > F
EDUC	5	2.82613620	0.56522724	0.62	0.6856

Source	DF	Type III SS	Mean Square	F Value	Pr > F
EDUC	5	2.82613620	0.56522724	0.62	0.6856

The SAS System 4
16:10 Friday, August 23, 1996

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: RECBEH1

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 301 MSE= 0.913571
Critical Value of Studentized Range= 4.056
Minimum Significant Difference= 0.7104
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 29.78654

Means with the same letter are not significantly different.

The SAS System 5
16:10 Friday, August 23, 1996

General Linear Models Procedure

Tukey Grouping	Mean	N	EDUC
A	4.0000	17	3
A			
A	3.8817	93	6
A			
A	3.7667	90	5
A			
A	3.6923	39	2
A			
A	3.6923	13	1
A			
A	3.6727	55	4

The SAS System 6
16:10 Friday, August 23, 1996

General Linear Models Procedure
Class Level Information

Class	Levels	Values
EDUC	6	1 2 3 4 5 6

Number of observations in data set = 307

The SAS System 7
16:10 Friday, August 23, 1996

General Linear Models Procedure

Dependent Variable: ENBEH1

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	12.54543030	2.50908606	3.62	0.0034
Error	301	208.85522117	0.69387117		
Corrected Total	306	221.40065147			

R-Square	C.V.	Root MSE	ENBEH1 Mean
0.056664	22.79213	0.832989	3.654723

The SAS System 8
16:10 Friday, August 23, 1996

General Linear Models Procedure

Dependent Variable: ENBEH1

Source	DF	Type I SS	Mean Square	F Value	Pr > F
EDUC	5	12.54543030	2.50908606	3.62	0.0034

Source	DF	Type III SS	Mean Square	F Value	Pr > F
EDUC	5	12.54543030	2.50908606	3.62	0.0034

The SAS System 9
16:10 Friday, August 23, 1996

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: ENBEH1

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 301 MSE= 0.693871
Critical Value of Studentized Range= 4.056
Minimum Significant Difference= 0.6191
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 29.78654

Means with the same letter are not significantly different.

The SAS System 10
16:10 Friday, August 23, 1996

General Linear Models Procedure

Tukey Grouping		Mean	N	EDUC
	A	4.1765	17	3
	A			
B	A	4.0256	39	2
B	A			
B	A	3.5889	90	5
B	A			
B	A	3.5806	93	6
B				
B		3.5385	13	1

B			
B	3.4909	55	4

The SAS System 11
16:10 Friday, August 23, 1996

General Linear Models Procedure
Class Level Information

Class	Levels	Values
EDUC	6	1 2 3 4 5 6

Number of observations in data set = 307

The SAS System 12
16:10 Friday, August 23, 1996

General Linear Models Procedure

Dependent Variable: CARBEH1

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	9.59587388	1.91917478	2.57	0.0270
Error	301	224.91878410	0.74723849		
Corrected Total	306	234.51465798			

R-Square	C.V.	Root MSE	CARBEH1 Mean
0.040918	58.71236	0.864430	1.472313

The SAS System 13
16:10 Friday, August 23, 1996

General Linear Models Procedure

Dependent Variable: CARBEH1

Source	DF	Type I SS	Mean Square	F Value	Pr > F
EDUC	5	9.59587388	1.91917478	2.57	0.0270

Source	DF	Type III SS	Mean Square	F Value	Pr > F
EDUC	5	9.59587388	1.91917478	2.57	0.0270

The SAS System 14
16:10 Friday, August 23, 1996

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: CARBEH1

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 301 MSE= 0.747238
Critical Value of Studentized Range= 4.056
Minimum Significant Difference= 0.6425
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 29.78654

Means with the same letter are not significantly different.

The SAS System 15
16:10 Friday, August 23, 1996

General Linear Models Procedure

Tukey Grouping		Mean	N	EDUC
	A	1.8974	39	2
	A			
B	A	1.5294	17	3
B	A			
B	A	1.4889	90	5
B	A			
B	A	1.3656	93	6
B	A			
B	A	1.3636	55	4
B				
B		1.2308	13	1

The SAS System 16
16:10 Friday, August 23, 1996

General Linear Models Procedure
Class Level Information

Class	Levels	Values
AGE	4	1 2 3 4

Number of observations in data set = 307

The SAS System 17
16:10 Friday, August 23, 1996

General Linear Models Procedure

Dependent Variable: RECBEH1

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	4.51523180	1.50507727	1.67	0.1738
Error	303	273.29584312	0.90196648		
Corrected Total	306	277.81107492			

R-Square	C.V.	Root MSE	RECBEH1 Mean
0.016253	25.09155	0.949719	3.785016

The SAS System 18
16:10 Friday, August 23, 1996

General Linear Models Procedure

Dependent Variable: RECBEH1

Source	DF	Type I SS	Mean Square	F Value	Pr > F
AGE	3	4.51523180	1.50507727	1.67	0.1738

Source	DF	Type III SS	Mean Square	F Value	Pr > F
AGE	3	4.51523180	1.50507727	1.67	0.1738

The SAS System 19
16:10 Friday, August 23, 1996

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: RECBEH1

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 303 MSE= 0.901966
Critical Value of Studentized Range= 3.653
Minimum Significant Difference= 0.6769
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 26.27303

Means with the same letter are not significantly different.

The SAS System 20
16:10 Friday, August 23, 1996

General Linear Models Procedure

Tukey Grouping	Mean	N	AGE
A	4.0000	9	4
A			
A	3.9483	58	3
A			
A	3.9074	54	1
A			
A	3.6882	186	2

The SAS System 21
16:10 Friday, August 23, 1996

General Linear Models Procedure
Class Level Information

Class	Levels	Values
AGE	4	1 2 3 4

Number of observations in data set = 307

The SAS System 22
16:10 Friday, August 23, 1996

General Linear Models Procedure

Dependent Variable: ENBEH1

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	6.47781539	2.15927180	3.04	0.0291
Error	303	214.92283607	0.70931629		
Corrected Total	306	221.40065147			

R-Square	C.V.	Root MSE	ENBEH1 Mean
0.029258	23.04440	0.842209	3.654723

The SAS System 23
16:10 Friday, August 23, 1996

General Linear Models Procedure

Dependent Variable: ENBEH1

Source	DF	Type I SS	Mean Square	F Value	Pr > F
AGE	3	6.47781539	2.15927180	3.04	0.0291

Source	DF	Type III SS	Mean Square	F Value	Pr > F
AGE	3	6.47781539	2.15927180	3.04	0.0291

The SAS System 24
16:10 Friday, August 23, 1996

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: ENBEH1

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 303 MSE= 0.709316
Critical Value of Studentized Range= 3.653
Minimum Significant Difference= 0.6003
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 26.27303

Means with the same letter are not significantly different.

The SAS System 25
16:10 Friday, August 23, 1996

General Linear Models Procedure

Tukey Grouping	Mean	N	AGE
A	4.0000	9	4
A			
A	3.8621	58	3
A			
A	3.7593	54	1
A			
A	3.5430	186	2

The SAS System 26
16:10 Friday, August 23, 1996

General Linear Models Procedure
Class Level Information

Class	Levels	Values
AGE	4	1 2 3 4

Number of observations in data set = 307

The SAS System 27
16:10 Friday, August 23, 1996

General Linear Models Procedure

Dependent Variable: CARBEH1

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	3.15429873	1.05143291	1.38	0.2498
Error	303	231.36035925	0.76356554		
Corrected Total	306	234.51465798			

R-Square	C.V.	Root MSE	CARBEH1 Mean
0.013450	59.35032	0.873822	1.472313

The SAS System 28
16:10 Friday, August 23, 1996

General Linear Models Procedure

Dependent Variable: CARBEH1

Source	DF	Type I SS	Mean Square	F Value	Pr > F
AGE	3	3.15429873	1.05143291	1.38	0.2498

Source	DF	Type III SS	Mean Square	F Value	Pr > F
AGE	3	3.15429873	1.05143291	1.38	0.2498

The SAS System 29
16:10 Friday, August 23, 1996

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: CARBEH1

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 303 MSE= 0.763566
Critical Value of Studentized Range= 3.653
Minimum Significant Difference= 0.6228
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 26.27303

Means with the same letter are not significantly different.

The SAS System 30
16:10 Friday, August 23, 1996

General Linear Models Procedure

Tukey Grouping	Mean	N	AGE
A	1.5517	58	3
A			
A	1.5108	186	2
A			
A	1.3148	54	1
A			
A	1.1111	9	4

The SAS System 31
16:10 Friday, August 23, 1996

General Linear Models Procedure
Class Level Information

Class	Levels	Values
EDUC	6	1 2 3 4 5 6

Number of observations in data set = 307

The SAS System 32
16:10 Friday, August 23, 1996

General Linear Models Procedure

Dependent Variable: RECINT1

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	6.93624792	1.38724958	1.67	0.1416
Error	301	250.02792146	0.83065755		
Corrected Total	306	256.96416938			

R-Square	C.V.	Root MSE	RECINT1 Mean
0.026993	22.33049	0.911404	4.081433

The SAS System 33
16:10 Friday, August 23, 1996

General Linear Models Procedure

Dependent Variable: RECINT1

Source	DF	Type I SS	Mean Square	F Value	Pr > F
EDUC	5	6.93624792	1.38724958	1.67	0.1416

Source	DF	Type III SS	Mean Square	F Value	Pr > F
EDUC	5	6.93624792	1.38724958	1.67	0.1416

The SAS System 34
16:10 Friday, August 23, 1996

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: RECINT1

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 301 MSE= 0.830658
Critical Value of Studentized Range= 4.056
Minimum Significant Difference= 0.6774
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 29.78654

Means with the same letter are not significantly different.

The SAS System 35
16:10 Friday, August 23, 1996

General Linear Models Procedure

Tukey Grouping	Mean	N	EDUC
A	4.2353	17	3
A			
A	4.2258	93	6
A			
A	4.1222	90	5
A			
A	3.9636	55	4
A			
A	3.8718	39	2
A			
A	3.6923	13	1

The SAS System 36
16:10 Friday, August 23, 1996

General Linear Models Procedure
Class Level Information

Class	Levels	Values
EDUC	6	1 2 3 4 5 6

Number of observations in data set = 307

The SAS System 37
16:10 Friday, August 23, 1996

General Linear Models Procedure

Dependent Variable: ENINT1

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	7.94870470	1.58974094	1.98	0.0810
Error	301	241.32816827	0.80175471		
Corrected Total	306	249.27687296			

R-Square	C.V.	Root MSE	ENINT1 Mean
0.031887	22.81246	0.895408	3.925081

The SAS System 38
16:10 Friday, August 23, 1996

General Linear Models Procedure

Dependent Variable: ENINT1

Source	DF	Type I SS	Mean Square	F Value	Pr > F
EDUC	5	7.94870470	1.58974094	1.98	0.0810

Source	DF	Type III SS	Mean Square	F Value	Pr > F
EDUC	5	7.94870470	1.58974094	1.98	0.0810

The SAS System 39
16:10 Friday, August 23, 1996

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: ENINT1

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 301 MSE= 0.801755
Critical Value of Studentized Range= 4.056
Minimum Significant Difference= 0.6655
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 29.78654

Means with the same letter are not significantly different.

The SAS System 40
16:10 Friday, August 23, 1996

General Linear Models Procedure

Tukey Grouping		Mean	N	EDUC
	A	4.4706	17	3
	A			
B	A	4.1026	39	2
B	A			
B	A	3.8925	93	6
B	A			
B	A	3.8889	90	5
B				
B		3.7818	55	4
B				
B		3.7692	13	1

The SAS System 41
16:10 Friday, August 23, 1996

General Linear Models Procedure
Class Level Information

Class	Levels	Values
EDUC	6	1 2 3 4 5 6

Number of observations in data set = 307

The SAS System 42
16:10 Friday, August 23, 1996

General Linear Models Procedure

Dependent Variable: CARINT1

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	8.98274876	1.79654975	1.60	0.1601
Error	301	338.17034570	1.12348952		
Corrected Total	306	347.15309446			

R-Square	C.V.	Root MSE	CARINT1 Mean
0.025875	60.93708	1.059948	1.739414

The SAS System 43
16:10 Friday, August 23, 1996

General Linear Models Procedure

Dependent Variable: CARINT1

Source	DF	Type I SS	Mean Square	F Value	Pr > F
EDUC	5	8.98274876	1.79654975	1.60	0.1601
Source	DF	Type III SS	Mean Square	F Value	Pr > F
EDUC	5	8.98274876	1.79654975	1.60	0.1601

The SAS System 44
16:10 Friday, August 23, 1996

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: CARINT1

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 301 MSE= 1.12349
Critical Value of Studentized Range= 4.056
Minimum Significant Difference= 0.7878
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 29.78654

Means with the same letter are not significantly different.

The SAS System 45
16:10 Friday, August 23, 1996

General Linear Models Procedure

Tukey Grouping	Mean	N	EDUC
A	2.1282	39	2
A			
A	1.7647	17	3
A			
A	1.7556	90	5
A			
A	1.7455	55	4
A			
A	1.6923	13	1
A			
A	1.5591	93	6

The SAS System 46
16:10 Friday, August 23, 1996

General Linear Models Procedure
Class Level Information

Class	Levels	Values
AGE	4	1 2 3 4

Number of observations in data set = 307

The SAS System 47
16:10 Friday, August 23, 1996

General Linear Models Procedure

Dependent Variable: RECINT1

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	2.75733463	0.91911154	1.10	0.3512
Error	303	254.20683475	0.83896645		
Corrected Total	306	256.96416938			

R-Square	C.V.	Root MSE	RECINT1 Mean
0.010730	22.44190	0.915951	4.081433

The SAS System 48
16:10 Friday, August 23, 1996

General Linear Models Procedure

Dependent Variable: RECINT1

Source	DF	Type I SS	Mean Square	F Value	Pr > F
AGE	3	2.75733463	0.91911154	1.10	0.3512
Source	DF	Type III SS	Mean Square	F Value	Pr > F
AGE	3	2.75733463	0.91911154	1.10	0.3512

The SAS System 49
16:10 Friday, August 23, 1996

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: RECINT1

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 303 MSE= 0.838966
Critical Value of Studentized Range= 3.653
Minimum Significant Difference= 0.6529
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 26.27303

Means with the same letter are not significantly different.

The SAS System 50
16:10 Friday, August 23, 1996

General Linear Models Procedure

Tukey Grouping	Mean	N	AGE
A	4.4444	9	4
A			
A	4.2222	54	1
A			
A	4.0517	58	3
A			
A	4.0323	186	2

The SAS System 51
16:10 Friday, August 23, 1996

General Linear Models Procedure
Class Level Information

Class	Levels	Values
AGE	4	1 2 3 4

Number of observations in data set = 307

The SAS System 52
16:10 Friday, August 23, 1996

General Linear Models Procedure

Dependent Variable: ENINT1

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	8.90174422	2.96724807	3.74	0.0115

Error	303	240.37512874	0.79331726		
Corrected Total	306	249.27687296			

R-Square	C.V.	Root MSE	ENINT1 Mean
0.035710	22.69210	0.890684	3.925081

The SAS System 53
16:10 Friday, August 23, 1996

General Linear Models Procedure

Dependent Variable: ENINT1

Source	DF	Type I SS	Mean Square	F Value	Pr > F
AGE	3	8.90174422	2.96724807	3.74	0.0115

Source	DF	Type III SS	Mean Square	F Value	Pr > F
AGE	3	8.90174422	2.96724807	3.74	0.0115

The SAS System 54
16:10 Friday, August 23, 1996

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: ENINT1

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 303 MSE= 0.793317
Critical Value of Studentized Range= 3.653
Minimum Significant Difference= 0.6348
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 26.27303

Means with the same letter are not significantly different.

The SAS System 55
16:10 Friday, August 23, 1996

General Linear Models Procedure

Tukey Grouping		Mean	N	AGE
	A	4.4444	9	4
	A			
B	A	4.1034	58	3
B	A			
B	A	4.0926	54	1
B				
B		3.7957	186	2

The SAS System 56
16:10 Friday, August 23, 1996

General Linear Models Procedure
Class Level Information

Class	Levels	Values
AGE	4	1 2 3 4

Number of observations in data set = 307

The SAS System 57
16:10 Friday, August 23, 1996

General Linear Models Procedure

Dependent Variable: CARINT1

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	0.40261039	0.13420346	0.12	0.9499
Error	303	346.75048408	1.14439104		
Corrected Total	306	347.15309446			

R-Square	C.V.	Root MSE	CARINT1 Mean
0.001160	61.50131	1.069762	1.739414

The SAS System 58
16:10 Friday, August 23, 1996

General Linear Models Procedure

Dependent Variable: CARINT1

Source	DF	Type I SS	Mean Square	F Value	Pr > F
AGE	3	0.40261039	0.13420346	0.12	0.9499

Source	DF	Type III SS	Mean Square	F Value	Pr > F
AGE	3	0.40261039	0.13420346	0.12	0.9499

The SAS System 59
16:10 Friday, August 23, 1996

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: CARINT1

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 303 MSE= 1.144391
Critical Value of Studentized Range= 3.653
Minimum Significant Difference= 0.7625
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 26.27303

Means with the same letter are not significantly different.

The SAS System 60
16:10 Friday, August 23, 1996

General Linear Models Procedure

Tukey Grouping	Mean	N	AGE
A	1.8148	54	1
A			
A	1.7258	186	2
A			
A	1.7241	58	3
A			
A	1.6667	9	4

APPENDIX G

RAW DATA

This appendix contains the raw data collected. A total of 307 sample responses were collected from active duty Air Force members assigned to Wright-Patterson AFB, OH. The actual data used in the analysis begins with column 41, corresponding to the first question in the survey.

Raw Data Collected

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555000002001070196001	5326 #0001	4312122521524414425555333333335444555555343333331122212222222111434334
555000003001070196001	5326 #0001	42111511 5154154155552244441155444455555544442222255144433311154444 5
555000004001070196001	5326 #0001	42221311 6143143243333322321135335543433322121122444154333311244443 3
555000005001070196001	5326 #0001	5332152511514415525555212244115442555555424333211115334433332223243 45
555000027001070196001	5326 #0001	4712132523422313215555234444444242435555553434342222213223223223444 34
555000001001072596001	5326 #0001	4222131146423213314444411333322444412333333212111111431312222111534311
555000002001072596001	5326 #0001	4632152211623314415555224444232322224444433233332224434333333333334455
555000003001072596001	5326 #0001	4822232522423313314444333333331212444444433333331114413323321115454 34
555000004001072596001	5326 #0001	4212142522524415515555223333333555555555555313131111221221222311555511
555000005001072596001	5326 #0001	4112132523524315224434443333334444444444444333333111433433333333333343
555000006001072596001	5326 #0001	4912132521624214215533443333334344445544343232321114224444444444545454
555000007001072596001	5326 #0001	4312142512624314414444233333334433544444343332221114413432331225444 45
555000008001072596001	5326 #0001	5332242511625215214444234433224444443344444333232134224444222222524322
555000009001072596001	5326 #0001	2333132511214414414444333344334444554444332222223334444424422223333 21
555000010001072596001	5326 #0001	4311232511625525535555523333334244445555553333333111442111111111515142
555000011001072596001	5326 #0001	2342121146315434435555334545334434554455335353331114444454444333422235
555000012001072596001	5326 #0001	3343132511124414415544115555114444555555144433111114411241111112141 11
555000013001072596001	5326 #0001	4312142512424214215433434422222244554424224222222111422444222222444444
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555000015001072596001	5326 #0001	4311142522624415555555443333333333333333333333333333333333333333333333
555000016001072596001	5326 #0001	4322132521424414415555554444334444555555333333331115524333333335544 33
555000017001072596001	5326 #0001	4311142523523314434444442222224432554555553333333222222222222222524244
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555000022001072596001	5326 #0001	4332132511425315315544333333334444444545453333332224222442222222444343
555000023001072596001	5326 #0001	3343132511324535545555444444222444414444444443321111521544222111222242
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555000025001072596001	5326 #0001	4322142511624415515555225555334244425555554444331114423443342225453 44
555000026001072596001	5326 #0001	3353132511213413414444333344334444422444444333333332244234434422243334 4
555000027001072596001	5326 #0001	23111211 2144155555553444443444335555555544442311144333333333344443 3
555000028001072596001	5326 #0001	3333132514234411415444233333332434344555353343331112235553555333444423
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555000032001072596001	5326 #0001	4312132522624414414444143333343444444444444242422224424444444445555 55
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555000034001072596001	5326 #0001	1311121246115515515555335555114444555555355553311355355555553335555 33
555000035001072596001	5326 #0001	4322132523414414424444223333335544335544443333331134413433333115332 55
555000036001072596001	5326 #0001	4322252521624415515544433333334444555555554444231114424432432225444 55
555000037001072596001	5326 #0001	2232152511325515515555235555224344335555335333221115525455453335544 43
555000038001072596001	5326 #0001	3253151146424454454444553333335444555555555333333111443444444433343433 3
555000039001072596001	5326 #0001	5253142511614524525555223344335555555555542333333113444545544433444433
555000040001072596001	5326 #0001	5353152511423313315544334444223434554434444444422222442444444333444423
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555000043001072596001	5326 #0001	4311122522425535535555355555345444345555445353332233422443432225554 22
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555000026001072596001	5326 #0001	422213252151221221333311333333414144111111313131551441333333333413311
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555000028001072596001	5326 #0001	461112114642551551555512255521555555454532424412111551545545111555511
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555000030001072596001	5326 #0001	424315114651441441444411333333444455555533434323222444444444444554415
555000031001072596001	5326 #0001	4332142 11423313334444443333333344422444444333333222332233323222444444
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555000034001072596001	5326 #0001	422213252152442442444432333313544432444443333323214432333333233444444
555000001001072596001	5326 #0001	4212222 2252541541555522344423443344555555444423111552545444222414244
555000002001072596001	5326 #0001	432213114662542552444422333333555455444444313131333442444444233424211
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555000004001072596001	5326 #0001	2 22121144223523535555544555533454532555555135533111551144144111355235
555000005001072596001	5326 #0001	2 3212114621552552444422444411555555443312333311333321323222111544411
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APPENDIX H

ATTITUDE/BEHAVIOR THEORY DEVELOPMENT

Attitudes and Personality Traits Involved in Understanding Behavior. It is common practice to explain human behavior by reference to stable underlying dispositions. When people are caught cheating they are considered dishonest and when people discriminate they are termed prejudiced. Dispositional explanations of behavior have a long and distinguished history in personality and social psychology. In the domain of personality psychology, the trait concept has carried the burden of dispositional explanation. In a similar fashion, the concept of attitude has been the focus of attention in explanations of human behavior offered by social psychologists. Personality traits and attitudes are latent, hypothetical characteristics that can only be inferred from external, observable cues. The most important such cues are the individual's behavior, verbal or nonverbal, and the context in which the behavior occurs. An individual's favorable or unfavorable attitude toward an object, institution, or event can be inferred from verbal or nonverbal responses toward the object, institution, or event in question. These responses can reflect perceptions of the object, or beliefs concerning its likely characteristics; they can be of an affective nature, reflecting the person's evaluations and feelings; and they can be of a cognitive nature, indicating how a person does or would act with respect to the object (Ajzen, 1988).

Consistency in Understanding Behavior. Dispositional explanation of human behavior presupposes a degree of coherence among thoughts, feelings, and actions. If people's reactions toward a given target were completely inconsistent across time and context, we could not attribute them to such stable underlying dispositions as attitudes or personality traits. Inconsistency in human behavior is the reason for the large amount of work in the field of psychology in order to better understand humans, and "the only completely consistent people are the dead," as stated by Aldous Huxley (Ajzen, 1988: 25). Most theorists, however, maintain the position that consistency is a fundamental property of human thoughts, feelings, and actions (Ajzen, 1988).

The Use of Aggregation in Understanding Behavior. A remedy for the poor predictive validity of attitudes and traits is the aggregation of specific behaviors across occasions, situations, and forms of action (Ajzen, 1991: 180). Regularities, patterns, or tendencies cannot be discerned in single instances of behavior. Rather, to obtain a measure of a behavioral tendency, we must aggregate observations made on different occasions. The aggregate measure represents the influence of factors consistently present across different occasions (the disposition to perform the particular behavior in question). In short, general behavioral dispositions can be inferred by applying the principle of aggregation to the varied types of specific response tendencies, thus eliminating the contaminating influence of variables other than the disposition of interest. In addition to aggregating repeated observations of a given action to obtain a high degree of consistency across occasions, it is possible to aggregate different actions in a given behavioral

domain, observed on various occasions and in diverse contexts. Based on a representative set of responses, such a multiple-act index will serve as a valid indicator of the underlying disposition. Neither single-act criteria nor the tendency to perform a specific behavior over time are representative of general traits or attitudes, according to the theory of aggregation. Only multiple-act criteria are sufficiently general to reflect such broad underlying dispositions (Ajzen, 1988).

The Presence of Moderating Variables in Behavioral Analysis. The application of the aggregation principle postulates broad attitudinal and personality dispositions, dispositions that are stable over time and that permit reasonably accurate prediction of multiple-act behavioral indices. Also, it has become clear that broad attitude and personality trait measures correlate very poorly with individual behaviors or behavioral tendencies. Situational variables impact specific behavior independent of whatever stable dispositions people bring to the situation, as well as moderating the effects of attitudes or personality traits. That is, people's characteristic traits or attitudes may influence their behavior in some situations but not in others. With the exception of an attitude's internal consistency, such secondary characteristics of attitude as the confidence with which it is held, the amount of information on which it is based, involvement with the attitude object, and the way in which the attitude is acquired, all seem to have a systematic impact on the accuracy of behavioral prediction (Ajzen, 1988).

Approaches Involved in the Attitude-Behavior Relationship. Explaining human behavior in all its complexity is a difficult task. It can be approached at many

levels, from concern with physiological processes at one extreme to concentration on social institutions at the other. Social and personality psychologists have tended to focus on an intermediate level, the fully functioning individual whose processing of available information mediates the effects of biological and environmental factors on behavior. Various theoretical frameworks have been proposed to deal with the psychological processes involved, as well as concepts referring to behavioral dispositions.

Because of the trend in the study of attitude-behavior relationships proposed by Kim and Hunter (1993), it is important to look at the various approaches that have developed throughout the years concerning the attitude-behavioral relationship.

The theories involved in attitude change or persuasion, which is any instance in which an active attempt is made to change a person's mind, have developed over the last fifty years, and are grouped into seven major approaches for the further understanding of the attitude-behavioral relationship: *conditioning and modeling approaches, message-learning approach, judgmental approaches, motivational approaches, attributional approaches, self-persuasion approaches,* and *combinatory approaches* (Petty and Cacioppo, 1981). Each of these approaches focuses on a different basic process to explain how and why people's attitudes change, and are presented roughly in the order in which they appeared.

Conditioning and Modeling Approaches. Conditioning and modeling approaches are rudimentary learning principles that focus on the direct administration of rewards and punishments to the target of influence or on the effects of the target

observing others being rewarded or punished for expressing certain attitudes (Petty and Cacioppo, 1981). Learning can be described as a relatively stable change in behavior that results from prior experiences, with associative learning occurring when a connection is drawn between two events in the environment. There are four explanations developed in the literature on how attitudes are learned: classical conditioning, operant conditioning, observational learning, and vicarious classical conditioning (Petty and Cacioppo, 1981).

Classical conditioning occurs when an initially neutral stimulus (the conditioned stimulus) is associated with another stimulus (the unconditioned stimulus) that is connected inherently or by prior conditioning to some response (the unconditioned response). It is the conditioning (learning) of reflex responses. According to Petty and Cacioppo (1981), people tend to like objects and recommendations that previously have been paired with unconditioned stimuli that elicit positive affective responses (e.g., pleasant scenery) and to dislike objects and recommendations that previously have been paired with unconditioned stimuli that elicit negative affective responses (e.g., unpleasant odors).

Operant conditioning is a second type of associative learning that occurs when some response becomes more (or less) likely because of its positive (or negative) consequences. Operant conditioning is based upon the supposition that people act to maximize the positive and minimize the negative consequences of their behavior (Skinner, 1938). From a series of studies on the verbal conditioning of attitudes suggests

that people actually do change their attitudes as a result of rewards and that these attitudes persist (Petty and Cacioppo, 1981).

Observational learning occurs when people learn which responses are rewarded and which are not by observing (rather than directly experiencing) consequences of the behaviors of other people. According to Bandura (1965), people must believe that the rewards associated with the model hold for them as well, and that these outcomes are worth the relative costs of performing the response (e.g., driving to the store and buying a particular product). Unless both of these conditions are met, observational learning may not lead to performance of the modeled behavior.

The last explanation developed in the literature on how attitudes are learned is the *vicarious classical conditioning* method, which represents a combination of classical conditioning and observational learning principles. Vicarious classical conditioning operates when a neutral stimulus, initially incapable of eliciting a strong emotional reaction from observers, gradually acquires that ability when paired with signs of strong emotional reactions on the part of another person (i.e., the model). In other words, the emotional response on the part of one person acts as a unconditioned stimulus and is capable of eliciting an unconditioned response in the form of a similar emotional response in an observer (Petty and Cacioppo, 1981). Research conducted by Petty and Cacioppo (1981) suggests that an initially neutral stimulus (such as a tone or a light) can become capable of eliciting a strong positive or negative attitude from people simply because they repeatedly observe others responding positively or negatively to it.

It is clear from these four explanations on how people form attitudes that there is no single way in which attitudes are learned, that people can develop and change their attitudes even though they are not purposely trying to do so, and that most support for conditioning models of attitudes comes from research that has been unfamiliar and/or neutral stimuli as attitude objects (meaning most of the research pertains to the formation of new attitudes rather than the changing of old ones).

Message-Learning Approach. The message-learning approach developed by Hovland, Janis, and Kelley (1953) examines how different variables affect a person's attention to, comprehension of, yielding to, and retention of the arguments in a persuasive message. Hovland and his colleagues never proposed a formal "theory" of attitude change, but rather they were guided by "working assumptions." They suggested that a persuasive communication must gain a person's attention and must be comprehended. The person must then mentally rehearse the message arguments and conclusions, thereby establishing a link between the issue and these implicit responses. Attending, comprehending, and remembering are important, but incentives are also of relevance. Hence, retention of the message arguments is important because it indicates that the person has attended, comprehended, and learned the persuasive communication. But Hovland and his colleagues believed that attitude change would occur only if the incentive for the new attitudinal position outweighed those associated with the initial attitude (Petty and Cacioppo, 1981). Thus, attention, comprehension, and retention are necessary but not sufficient preconditions for attitude change.

According to the message-learning approach, persuasive contexts (e.g., sources, messages) question a recipient's initial attitude, recommend the adoption of a new attitude, and provide incentives for attending to, understanding, yielding to, and retaining the new rather than the initial attitude. Important components that must be considered in this approach are the source, message, and recipients (Petty and Cacioppo, 1981). The *source* of a persuasive communication may be a person, a group, an institution, and so forth. The important factors that will influence the source include credibility, attractiveness, similarities, and communication power of the source. An effective *message* provides incentives for learning and accepting the advocated attitudinal position, with the most effective means of delivering the message being comprehensibility, having a large number of arguments, clearly stating rewards and fears, using a two-sided approach, using the conclusion-drawing technique, identifying the sources early, and repeating the message. The last component that must be considered in the message-learning approach is the recipient, with the factors that affect recipient retention including intelligence and self-esteem. The working assumption underlying the message-learning approach is that the message learning portended attitude change, particularly when incentives were provided in the persuasive message for accepting the recommended position.

Judgmental Approaches. A third approach in the understanding of attitudes are the judgment theories of persuasion, which focus on how a person perceives the message and how attitude judgments are made in the context of a person's past

experiences (Petty and Cacioppo, 1981). These past experiences can lead a person to distort the position of a persuasive message. The judgmental approaches include adaptation level theory, social judgment theory, and perspective theory (Petty and Cacioppo, 1981).

The underlying postulate of judgmental theories, including *adaptation level theory* as elaborated by Helson (1959; 1964), is that all stimuli can be arranged in some meaningful order. Adaptation level theory gets its name from the point on the dimension of judgment that corresponds to the psychological neutral point, and is defined as a weighted geometric average of all the stimuli that a person takes into account when making a particular judgment. The adaptation level is important because other stimuli are judged in relation to it. The theory has not led to much research on social influence or attitude change, and to date there is not a single persuasion study that can be explained exclusively by adaptation level principles (Petty and Cacioppo, 1981).

Social judgment theory represents an ambitious attempt to derive specific persuasion predictions by the application of judgmental principles (Sherif and Hovland, 1961). The theory assumes, like adaptation level theory, that people tend to arrange stimuli in a meaningful order on a psychological dimension (i.e., youngest to oldest). Judgments about physical as well as social stimuli are subject to two judgmental distortions: contrast and assimilation (Petty and Cacioppo, 1981). Contrast refers to a shift in judgment away from an anchor or reference point, and assimilation refers to a shift in judgment toward an anchor. In the realm of attitudes, one's own attitude is

thought to serve as a powerful anchor, and the opinions and attitudes expressed by others displaced either toward or away from one's own position. Those attitudes that are relatively close to one's own are assimilated (seen as closer than they actually are), but attitudes that are very discrepant from one's own are contrasted (seen as further than they actually are) (Petty and Cacioppo, 1981). Unlike adaptation level theory, which has seen little application to persuasion or attitude understanding, the social judgment approach has generated a considerable amount of research. Although the theory is quite clear about predicting the judgmental distortion effects - assimilation and contrast - it is less clear about how and why these processes affect attitude change.

A final judgmental approach, *perspective theory*, as outlined by Upshaw (1969) and Ostrom and Upshaw (1968), distinguishes between the content of an attitude and the judgmental language a person uses to describe his or her attitude. The content of an attitude refers to all of the various ideas, beliefs, images, and other elements associated with the attitude object or issue. The rating of an attitude refers to how the person presents his or her position on an evaluative dimension (e.g., pro-con). The perspective mediates the relationship between the content and the rating of one's attitude, referring to the range of content alternatives that an individual takes into account when an attitude object is rated. For any attitude issue, then, an individual's perspective is defined by what he or she considers to be the most positive and the most negative content positions that are reasonable (Petty and Cacioppo, 1981).

Adaptation level theory, social judgment theory, and perspective theory all deal with the same type of phenomena, but differ where the attitude rating scale is anchored. Adaptation level theory posits that the subjective neutral point on the scale is the most important anchor; social judgment theory holds that the person's own attitude is the most important anchor; and perspective theory contends that the extreme end points of the scale serve as anchors (Petty and Cacioppo, 1981). Evidence reveals that there is evidence indicating that a rating scale is anchored at all of these places (Ostrom and Upshaw, 1968). Another difference in the three approaches is that adaptation level theory and social judgment theory view judgmental distortions (assimilation and contrast) as representing a fundamental shift in the perception of an object or issue, while perspective theory views these distortions as representing only a change in response language. Adaptation level theory and social judgment theory share the view that assimilation and contrast effects represent a fundamental shift in how an object or issue is perceived. Perspective theory, however, views assimilation and contrast effects as a shift in how an object or issue is described (Petty and Cacioppo, 1981). It is important to note that assimilation and contrast effects cannot be attributed to mere changes in judgmental language, and how a person judges the position of an incoming message is a crucial determinant of the nature and amount of attitude change that results.

Motivational Approaches. Motivational approaches relate to the general notion of consistency, which are those attitudes that favor a strong tendency for people to maintain consonance among the elements of a cognitive system. The characteristics that

consistency theories of attitudes have in common include: each describing the conditions for equilibrium and disequilibrium among cognitive elements, each asserting that disequilibrium motivates the person to restore consistency among the elements, and each describing procedures by which equilibrium might be accomplished (Petty and Cacioppo, 1981). There are five motivational/consistency theories that are of importance: balance theory, congruity theory, cognitive dissonance theory, impression management theory, and psychological reactance theory.

Balance theory, as defined by Heider (1958), is concerned with the operation of consistency. Balance is a harmonious state in which all of the elements appear to the individual to be internally consistent...and is the most pleasant, desirable, stable, and expected state of relationships among any set of elements to which a person attends (Heider, 1958). Heider (1958) focuses on triads (three elements), labeling the elements as p, representing the subject or self; o, representing the other person; and x, symbolizing some stimulus or event. There are eight possible configurations that exist among the three cognitive elements, with balance occurring when you agree with a person you like and you disagree with a person you dislike. Imbalance occurs when you agree with a person you dislike and you disagree with a person you like. Balance is the preferred and stable state, and balance exists in a person's mind rather than in objective fact (Heider, 1958). When all three elements of the triad (p-o-x) are salient, balance theory predicts that its pleasantness, stability, and so forth are maximal when the product of the relations is positive. This tendency is termed the balance effect.

The balance model is less determinate in its predictions than the congruity model, and it does not undertake to specify the particular effect of new information but only a set of effects from which the particular one will be drawn (Brown, 1965b). The model predicts the occurrence of one from a small number of possible changes - all of them working in the direction of increased consistency. Elements in the balance model are the objects of attitudes, assuming values in someone's mind. They are given signs that are either negative (-), zero (0), or positive (+). There is equilibrium in the model so long as elements of identical sign are linked by positive relations or by null relations, and so long as elements of opposite sign are linked by negative relations or by null relations. A condition of imbalance alone is not sufficient to generate change in the balance model, rather a person must think about the elements and relations in question before he or she will be motivated to change (Brown, 1965b).

The *congruity theory*, first proposed by Osgood and Tannenbaum (1955), overcomes a major criticism of Heider's balance theory that there are no provisions for degrees of liking or belongingness between elements by quantifying gradations of liking. Although congruity theory is more limited than balance theory, it does make very specific, quantitative predictions about the effects of imbalance (incongruity). Congruity theory focuses on two elements: the source and a concept, and one relation (the assertion made by the source about the concept). It has pressures that exist to motivate a person to restore congruity by changing attitudes toward both elements, and if a person feels strongly about one of the elements, that element will change less than the other. The

congruity model is the most detailed and explicit model, forming a model or abstract simulation of attitude change (Brown, 1965a). This model says in effect that when certain kinds of information are fed into the human psychological apparatus, certain perfectly determinate changes of attitude will result. The congruity model offers a generalized attitude scale that is content-free, a line from -3 to +3, on which any object whatsoever can be placed (Brown, 1965a). Anything that can be named and valued can go on such a scale, and that includes almost everything. The model predicts, also, that evaluation of concepts will rise when associative bonds are created with highly valued sources, whereas the evaluation will fall when associative bonds are created with dislike sources. Dissociative bonds, on the other hand, result in a rise for the concept when the source is disliked and fall when the source is admired. Since both source and concept are objects of evaluation in the congruity model, the predictions for change of attitude toward sources with favorable and unfavorable assertions are the same as the predictions for concepts. The congruity model also holds that susceptibility to attitude change is inversely proportional to the polarization or extremity of the attitude. The congruity theory improves on Heider's (1958) balance theory by specifying precise, directional, and testable predictions and by quantifying sentiment toward another person (source) and object (concept) (Petty and Cacioppo, 1981).

Cognitive dissonance theory, proposed by Leon Festinger (1957), has generated more research and debate in social psychology than balance and congruity theory put together, or any other theory discussed (Petty and Cacioppo, 1981). According

to Festinger (1957), two elements are consistent (consonant) when one follows from the other, and inconsistent (dissonant) when knowledge of one suggests the opposite of the other. Relations among elements in dissonance theory are determined by a person's subjective expectations regarding them rather than by their logical interrelationships. The magnitude of the dissonance within a set of many elements is determined by the proportion of relevant elements that are dissonant and by the importance of the elements to the person. "To limit the investigation to the observation of action alone would be to ignore the paramount fact that the actor is constantly registering awareness what is happening to him and that this alters his subsequent acts" (Stotland and Canon, 1972: 65). Cognitive theory deals "with the problem of how man gains information and understanding of the world about him, and how he acts in and upon his environment on the basis of such cognitions" (Stotland and Canon, 1972: 65). A cognition can be identified as a centrally mediated process of representing external and internal events. An approach which focuses on cognitive activity, then, stresses the role which these sorts of perceptual organizations play as mediators between the stimuli which impinge upon the individual and the response he makes to them. Cognitions are viewed as an example of what have been called mediating variables in that, though they may not be directly observed, they are held to shape and influence in important ways the relationship between an observable stimulus and a measurable response. Their functioning is presumed to intervene between stimulus and response and to be involved in an important way in determining the meaning which the stimulus has for the individual, and it is in terms of

this meaning that a response is initiated. Thus, there is greater concern with developing an understanding of the nature and operation of internal, cognitive processes than with a focus on the physical characteristics of the stimuli to which the individual ultimately responds.

Dissonance is described by Festinger (1957) as a motivational state that energizes and directs behavior, and is aroused when a person is forced to conclude that he or she is the willing causal agent of some discrepant and personally significant decision that leads predictably to some form of negative consequences. Cognitive dissonance will give rise to activity oriented toward reducing or eliminating the dissonance. A person can rid themselves of dissonance by changing one of the elements to make two elements more consonant, by adding consonant cognitions, and by changing the importance of the cognitions. Experimental manipulations of cognitive dissonance induce a generalized drive similar in some respects to that produced by traditional motivational states, physiological activity similar to that found in individuals under stress, and an unpleasant subjective feeling (Petty and Cacioppo, 1981). Cognitive dissonance theory serves as a heuristic for a wide variety of observations.

Another motivational/consistency theory is the *impression management theory*, which deals with how people present an image to others in order to achieve a particular goal (Goffman, 1959). Impression management theory assumes that a primary goal in presenting oneself to others is the attainment of social approval (Arkin, 1981). One of the most interesting applications of impression management theory is as an

alternative to dissonance theory (Tedeschi et al, 1971). The impression management theorists agree with Festinger (1957) that tension is produced when people act publicly in a manner contrary to their attitudes; however, the theorists argue that the tension is not produced by dissonant cognitions but rather by people's knowledge that they appear inconsistent to others. People then manage more carefully the impression they are making on others by restoring consistency to their actions or to their expression of attitudes.

A final motivational/consistency theory is the *psychological reactance theory* developed by Brehm (1966). According to Brehm (1966), threatening to restrict or actually eliminating a person's freedom to act as he or she chooses arouses in that person a motivational drive called psychological reactance. This psychological reactance motivates a person to reestablish the lost or threatened free behavior or attitude. To arouse reactance in people, Brehm (1966) asserted that: people must first perceive it as likely that they are no longer free to think or do something that they previously could; the less important the threatened behavior is to an individual, the less reactance aroused by its elimination; reactance is aroused in direct proportion to the extent to which the free behavior is limited; the extent of reactance arousal depends upon the similarities of the alternatives to the restricted behavior; and reactance is not aroused if the individual feels inadequate, incompetent, or controlled by external events.

Motivational/consistency approaches as they relate to attitude change have been discussed in relation to several theories. The balance and congruity theories of

attitude change address the need or desire to maintain cognitive consistency, or what people consider to be "logical" consistency among their beliefs. Cognitive dissonance theory addresses the attitudinal effects of the drive to maintain cognitive consistency between pairs of elements, such as between one's attitude and one's behavior. Impression management theory, another consistency theory of sorts, details how our attitudes are influenced by the desire to maintain a consistency in social behaviors (including attitude expressions) across situations. Finally, psychological reactance theory outlines the effects of threatening or eliminating our freedom to choose freely how to think, feel, and act.

Attributional Approaches. An attribution is an inference made about why something happened, why someone did or said something, or why one acted or responded in a particular way. The basis of the attributional approach is that people infer underlying characteristics, such as attitudes and intentions, from the verbal and overt behaviors they observe (Petty and Cacioppo, 1981). The most common feature of the attributional approaches is that an inference about the cause of a response is the most direct antecedent of attitude change. The inference might be that there is something internal (person's attitude) or external (threat to person's life) to the person that caused an observed behavior. The former type of inference is called a dispositional attribution, whereas the latter is called a situational attribution. The three important theories developed on attribution include the self-perception theory, emotional plasticity, and bogus physiological feedback.

The *self-perception theory* was developed by D.J. Bem (1967), and suggested that people infer their own attitudes in much the same way as they infer the attitudes of others - by the behavior they observe. Bem (1967) reasoned that an individual's attitude statements may be viewed as inferences from observations of his or her own behavior and its accompanying stimulus variables. As such, statements are functionally similar to those any outside observer could make. The foot-in-the-door technique for inducing compliance illustrates how self-perception influences attitudes and behaviors by presuming people become more likely to perform a large and costly favor for you if they have previously agreed to perform or have performed a smaller favor (Freedman and Fraser, 1966). Complications in this technique include the fact that acceding to the small request must occur in a situation that does not provide obvious external justification for doing the small favor, and people are more likely to comply with a second, larger request only if there is a time delay between their agreement to comply with the initial, small request and the second request. Bem's theory of self-perception holds that, to the extent that plausible external causes for an act are absent or nonobvious, the person who engaged in the act infers his or her attitude toward the topic on the basis of his or her behavior. Explanation of the subtle adjustments in attitudes that follow acts that are generally consistent with a prior attitude is accomplished by the attributional approach, but it does not account as well for attitude change following insufficiently justified behavior that is highly discrepant from the person's initial attitude.

The theory concerning *emotional plasticity* developed by Schachter and Singer (1962) reasons that when people experience an unexplained and diffuse change in their bodily responses, such as a surge of arousal, they search for external cues that might help them to identify what these changes mean. If the situation in which they find themselves contains cues indicating that they are angry, then they surmise that the unusual bodily responses they are feeling are due to their being angry. If however, the situation contains cues indicating that they are happy, then they deduce that they must be happy (Schachter and Singer, 1962). The fundamental concept of emotional plasticity is that experiencing unexplained and neutral arousal causes one to search the situational context for cues to determine the meaning of the felt arousal.

The effects of *bogus physiological feedback*, as proposed by Valins in 1966, developed out of Schachter and Singer's (1962) work. Valins (1966) suggested that people need not perceive actual physiological changes in order to be affected by these cues, but need only to believe that their bodily responses changed. The research on bogus physiological feedback provides several important qualifications to the attributional approach to attitudes. First, self-perception theory must be broadened to encompass perceived internal cues and accord them the same theoretical status as behavioral and environmental cues in the attitude-inference process. And second, self-perception processes are operative primarily when the attitudes involved are on issues that are low in personal relevance or importance (Petty and Cacioppo, 1981).

The attributional approach to attitudes and persuasion characterizes people as active problem solvers and focuses on changes in attitudes that result from reasoned inferences. A person's inferences or attributions about the cause of a behavior are the most important determinants of the resulting attitude change, and is a notion common to the attributional theories.

Self-Persuasion Approach. The self-persuasion approach emphasizes the information that people generate themselves, either in response to a persuasive message or in the absence of a persuasive message (Petty and Cacioppo, 1981). The focus is on the persuasive impact of information that originates internally, with the self-generated information resulting from a specific role-playing request (Janis, 1959, 1968; Janis and King, 1954; Janis and Mann, 1977), from merely thinking about an attitude object (Tesser, 1978; Tesser and Leone, 1977), or from specific cognitive responses to the arguments in a persuasive message (Greenwald, 1968; Petty, Ostrom, and Brock, 1981; McGuire and Papageorgis, 1962). Depending upon the nature of these self-generated thoughts, a person's attitude can become either more positive or more negative toward the attitude object. Self-persuasion is so potent because people appear to have a higher regard for the information they generate themselves than information that originates externally, and people can better remember arguments that originate internally than externally.

Combinatory Approaches. A person's attitude about some person, object, or issue is determined by the information the person has about the stimulus and by how

that information is combined or integrated to form one overall impression. The various combinatory approaches in the understanding of attitudes and persuasion (behavioral change) include probabilogical approaches to belief change, information integration theory (cognitive algebra), the theory of reasoned action (TRA), and the theory of planned behavior (TPB).

The *probabilogical approaches to belief change* are structured to view beliefs as existing in an interconnected syllogistic network containing both a vertical and a horizontal structure (Bem, 1970; McGuire, 1960). Beliefs are thought to provide the cognitive foundation of an attitude, and in order to change an attitude it is necessary to modify the information on which the attitude rests. Change can occur by way of directly changing a person's beliefs, eliminating old beliefs, or introducing new beliefs (Petty and Cacioppo, 1981). A belief syllogism is a set of three statements, two of which serve as premises that lead psychologically to a conclusion. The conclusion is an inferential belief that is derived or makes sense on the basis of the two premises. It is likely that the premises of the syllogism serve as the conclusions of other syllogisms in the belief structure. It must be noted that if a belief high in the vertical structure is changed, then it would have implications for beliefs that are further down the chain of reasoning. In addition to the vertical structure, belief systems are thought to possess a horizontal structure that draws conclusions on one syllogism serving as the conclusion of other syllogisms (Petty and Cacioppo, 1981). It must be noted that the more extensive the horizontal structure of a belief, the less susceptible a belief will be to change when one of

the premises in its vertical structure is changed. The most important contributions of the probabilogical models of Wyer (1970, 1974) and McGuire (1960b, 1981) are that there is a strain toward hedonic as well as logical consistency in beliefs, and that an induced change in one belief is capable of producing a change in a logically related belief, even though the related belief is never mentioned or attacked directly by a persuasive message.

Norman Anderson (1971) proposed a general combinatory theory of human judgment and decision called *information integration theory (cognitive algebra)*. This theory has considerable relevance to the study of attitudes and behavior, and has as its basic tenet that much of human judgment and decision, including attitude judgment, obeys simple algebraic models - specifically weighted averaging models. According to the information integration theory, attitude judgments are determined by several beliefs, with the belief information generated from memory or external sources (Anderson, 1971). Each piece of information is represented by two parameters - a scale value and a weight. The scale value represents how favorably or unfavorably a person is towards the information, and the weight represents how important the information is to the person. In attitude judgments, the person's initial attitude is always one piece of information that is considered along with any other salient information. A weakness of Anderson's model is its inability to anticipate many effects in advance, although the algebraic model can account for virtually any data set after it is collected.

APPENDIX I

BREAKDOWN OF QUESTIONS IN SURVEY

Breakdown of Questions in Survey

Demographic Questions

1. What is your pay-grade?
2. Which organization are you assigned to?
3. How long have you been in the Air Force?
4. What is your age?
5. What is your gender?
6. What is your gross annual FAMILY income (all family members including yourself)?
7. Do you live on base?
8. If you live on-base, what type of on-base housing do you occupy?
9. If you live off-base, do you own or rent your housing?
10. If you live off-base, what type of housing do you occupy?
11. What is the highest educational level, credential, or degree that you have completed?
12. Have you ever attended an environmental training class sponsored by the Air Force?

Questions Concerning Specific Environmental Behavior

13. I recycle at work.
14. I conserve energy at work.
15. I carpool to work.

Questions Concerning Intention

16. I intend to recycle at work.

17. I intend to conserve energy at work.

18. I intend to carpool to work.

Questions Corresponding to Attitude

19. I like the idea of recycling at work.
20. I have a good attitude toward recycling at work.

21. I like the idea of energy conservation at work.
22. I have a good attitude toward energy conservation at work.

23. I like the idea carpooling to work.
24. I have a good attitude towards carpooling to work.

Questions Corresponding to Subjective Norm

25. People who influence my decisions at work think I should recycle at work.
26. People who are important to me at work think I should recycle at work.

27. People who influence my decisions at work think I should conserve energy at work.
28. People who are important to me at work think I should conserve energy at work.

29. People who influence my decisions at work think I should carpool to work.
30. People who are important to me at work think I should carpool to work.

Questions Corresponding to Perceived Behavioral Control (Theory of Planned Behavior)

31. Whether or not I recycle at work is entirely up to me.
32. I have complete control over the amount of recycling that I do at work.

33. Whether or not I conserve energy at work is entirely up to me.
34. I have complete control over the energy conservation that I do at work.

35. Whether or not I carpool to work is entirely up to me.
36. I have complete control over my use of carpools to work.

Questions Corresponding to Behavioral Beliefs (and Outcome Evaluation)

37. My recycling at work will help the environment.
38. Helping the environment by recycling at work is good.

39. My conservation of energy at work will help the environment.
40. Helping the environment by conserving energy at work is good.

41. My carpooling to work will help the environment.
42. Helping the environment by carpooling to work is good.

Questions Corresponding to Normative Beliefs (and Motivations to Comply)

43. My co-workers think I should recycle at work.
44. With respect to recycling at work, I want to do what my co-workers think I should do.

45. My co-workers think I should conserve energy at work.
46. With respect to conserving energy at work, I want to do what my co-workers think I should do.

47. My co-workers think I should carpool to work.
48. With respect to carpooling to work, I want to do what my co-workers think I should do.

Questions Corresponding to Economic Motivation

49. Recycling at work is worthwhile only if I get paid to do so.

50. Conserving energy at work is worthwhile only if I get paid to do so.

51. Carpooling to work is worthwhile only if I get paid to do so.

Questions Corresponding to Awareness Programs

52. My organization has programs that promote recycling awareness.

53. My organization has programs that promote energy conservation awareness.

54. My organization has programs that promote carpooling awareness.

Questions Corresponding to Organizational Commitment

55. There is adequate information about recycling at my place of work.
56. There is adequate concern for recycling among my co-workers.
57. There is adequate concern for recycling among my supervisors.

58. There is adequate information about energy conservation at my place of work.
59. There is adequate concern for energy conservation among my co-workers.
60. There is adequate concern for energy conservation among my supervisors.

61. There is adequate information about carpooling at my place of work.
62. There is adequate concern for carpooling among my co-workers.
63. There is adequate concern for carpooling among my supervisors.

Questions Corresponding to Resource-Facilitating Conditions

64. I have convenient access to a recycling container at work.
65. Having the time to recycle at work is an important part of my decision whether to engage in the behavior.

66. It is convenient for me to conserve energy at work.
67. Having the time to conserve energy at work is an important part of my decision whether to engage in the behavior.

68. I have convenient access to a carpool group to work.
69. Having the time to carpool to work is an important part of my decision whether to engage in the behavior.

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13. ABSTRACT *(Maximum 200 words)*

A questionnaire was randomly distributed to members of the United States Air Force at Wright-Patterson AFB, OH, with 307 returned. The survey was designed to test the Theory of Planned Behavior (TPB) model developed by Icek Ajzen, and the Organizational Theory of Planned Behavior (OTPB) model explored in this research effort. Validation and measurement of the TPB in relation to an organizational setting was accomplished, with the Organizational Theory of Planned Behavior (OTPB) developed. The behaviors and intentions individuals have towards recycling, energy conservation, and carpooling were examined, with the demographic variables of gender, age, and education also investigated. Regression analysis revealed that the TPB is supported by this research, while the OTPB is not well supported. However, the organizational commitment component of the OTPB does account for significant variance, and seems to support a portion of the OTPB. The demographic variables of gender, age, and education provide useful insight into the organization. Women show a greater tendency to carpool to work than men, and are more likely to participate in the behavior. Also, having some college education influences energy conservation behavior, energy conservation intention, and carpooling behavior at work. It was also shown that those who are older have a greater tendency to conserve energy at work, and are more likely to participate in the behavior.

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